

A PHILOSOPHICAL
ESSAY ON MAN.

BEING
AN ATTEMPT
TO INVESTIGATE THE
PRINCIPLES AND LAWS
OF THE
RECIPROCAL INFLUENCE

OF
SOUL AND BODY.

V O L. II.

Unde animi constet natura, videndum.
LUCR. DE NAT. RER.

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B O O K III.

ON THE RECIPROCAL INFLUENCE

OF THE SOUL AND BODY.

HITHERTO we have examined the different functions and mechanism of the body; we have considered the soul in its faculties; we have followed these faculties in their unfolding and exercise; in a word, we have endeavoured to discover the nature of the soul and body by their effects,

Although this does not convey the full science of Man, it is yet its proper ground work; and without it, we should in vain attempt to explain the arcana of human nature; so that the greatest philosophers, without this guide, may be said to wander amidst thick darkness. A philosophic enquirer will indeed at times perceive some feeble glimmerings of light, but will never acquire a perfect knowledge of the subject; he will only collect some scattered ideas, and unconnected truths, without

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any relation the one to the other. Having therefore considered Man in the different substances of which he is composed; let us now consider Man properly so called, try to discover the reciprocal influence of these two substances, and endeavour to investigate the causes of their wonderful relations. But before we attempt to reason on the causes, we must first ascertain the effects. We shall therefore confine ourselves to a precise and simple exposition, and reduce our observations to those facts which are clear and well supported.

All the parts of nature are connected; air, water, earth, plants, minerals, animated and inanimate substances, are all linked together by some correspondence between causes and effects: every being in the universe is related to some other, and even the great Author of nature himself. But in no possible union of beings have any two been joined of more opposite natures, or whose connexion is more intimate, than the soul and body; neither have any two beings a greater or more extraordinary reciprocal influence.

All beings act one upon the other, not by a blind and fortuitous energy, but by
con-

Of the SOUL on the BODY. 5

constant and immutable laws; of this nature is the action of the soul on the body, and of the body on the soul, in all animals.

How plainly soever this influence may appear, it has not been examined with sufficient care and attention: although on such an enquiry depends the knowledge of the principles and laws of this mysterious influence. I shall therefore apply myself to a careful examination of these relations; and as neither the soul nor the body is a simple being, as each of these substances is in itself compound*, and as their constituent parts do not all act together, that I may not proceed without a plan, I shall distinguish their particular influence, and treat them as distinct objects. In the prodigious multitude of observations which may be made on this

* I say compound, and desire the reader not to be alarmed. The soul is undoubtedly a compound being, although metaphysicians maintain it to be a simple one, but not compound in the same sense with the body; its component parts are the different faculties: moreover observe, that the term compound does not imply materiality, nor any way contradict the spirituality of the soul.

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subject, I shall range, in the same class, all those which have one common object, connect particular observations with those which are general, and, collecting them into one whole, endeavour to give a concise yet complete history of the reciprocal influence of these two very different substances.

SECTION I.

Of the Power of the Body on the Soul.

Man has two modes of existence, viz. sleeping and waking.

Sleep is properly only a mode of the existence of the body, in which every function of its organs is suspended, except that of the organs of life: in waking, every spring of the machine is, or may be in action. In both these states the soul perceives, thinks, recollects, and all its faculties are in exercise; but their exercise is performed differently in each of these states. Let us therefore examine the relations of the soul to the body, and of the body to the soul, both when sleeping and waking.

Of

Of SLEEPING.

Observation I. As sleep approaches, the vivacity of our motions decays, the weary limbs relax and yield to their own weight, the head gradually declines on the shoulder, a sentiment of pleasure steals on every organ, and we seem to feel the gentle motion of the blood as it flows through the veins. The senses are now inactive, but no part is yet asleep; sensibility gradually leaves the organs, at length the eyes yield to the pleasing influence of the God, and a refreshing calm reigns throughout the body. The soul likewise partakes in this enchanting stillness, forgets every thing, even itself, and imperceptibly sinks into insensibility. But in this universal repose, the mind is not inactive, its operations are only less sensible; the sensations are weak, so likewise are the sentiments and ideas, and the more so in proportion as the sleep is deep.

Freed from the power of the senses, the soul now enjoys its liberty; it thinks, but its thoughts are irregular, incoherent, unconnected; and from their assemblage are formed those phantastic images, those

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whimsical representations, those phantoms, and flitting shades, which constitute our nocturnal illusions.

II. In sleep, thought freely rambles over all kinds of objects, and imagination appears to be the only acting power. Although the soul at that time appears to be entirely freed from all subjection to the body, the disposition of the corporeal organs always determine the nature of the dream. If the sensation then felt by the body be agreeable, there is a continual series of pleasing illusions and flattering images. On the contrary, if the sensation be painful, a succession of frightful ideas and hideous objects, haunt us during sleep; monstrous phantoms, scenes of blood and death appear; ghosts, goblins, and horrible spectres terrify us.

The influence of the body is not confined to the nature of the objects of our dreams; it likewise regulates their continuance. If the body is afflicted with any languishing disorder, these spectres and these phantoms seldom disappear, and seem to haunt us continually. On the contrary, if the body is affected by any acute disorder, the illusions are transient, the phan-

phantoms assume many different forms, and succeed each other very rapidly.

There is something yet more wonderful in the analogy between the dream and the then present sensation.

If we at any time experience, during sleep, those pleasing titillations, which the semen, when redundant, produces on the organs of pleasure, we fancy we see agreeable objects; that we hold converse with beautiful fair ones, in enchanted groves; they that expose all their virgin charms to our sight, and withhold nothing from our desires. In painful sensations, appear phenomena equally surprising, whereof every one doubtless has had experience, against his will.

When we lie in an uneasy posture, whereby respiration is oppressed, and the circulation of the fluids obstructed, we dream of being pursued by enemies, spectres, forcerers, devils, whilst we have not the power to fly.

In the heat of a fever, we dream that we are perishing with thirst, that we traverse immense regions in search of fountains, without finding any, and that when we have found one, we apply our parched

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parched lips to it, but the water flies back, and all our efforts to allay our thirst are in vain; so that like *Tantalus*, we perish through want amidst the greatest abundance.

III. In dreams, we think much, feel more, and reflect little; the sensations and images succeed each other with rapidity, but the soul neither compares nor remembers them.

IV. Although in general the soul reflects but very little during sleep, the degree of reflection is not the same in every individual. The ideas, which strongly affect us whilst awake, are retraced in the mind during sleep, and we continue to combine them. Thus geometricians form and combine figures, poets make verses, and philosophers reason.

Of WAKING.

V. When the body has been refreshed by rest, the organs of sense insensibly resume their functions, the pulse gradually quickens, the face regains its colour, and by degrees all those vain images, enchanted regions, and ideal objects disappear;
in

in fine, Man opens his eyes, and is conscious where he is.

I have said, that the exercise of the faculties of the soul is not performed during sleep, as when we are awake; and even when we are awake, it is not always performed invariably in the same manner.

VI. The soul grows weary just as the body does. When fatigued with too intense or too long application, it loses in some degree the faculty of applying itself to one subject; the ideas become weak and languid, there are no more sallies of wit, no more flights of genius. In this state, should we force attention, immediately every thing in the mind is effaced, we no longer think, we fall into a kind of lethargy, and a kind of insensibility.

When the body is fatigued, its motions no longer retain their vigor, all its functions are weakly performed, external objects produce only weak impressions on its organs, and the sensations have neither force nor vivacity.

VII. The mind not only becomes fatigued like the body, but what is most singular, they become both fatigued at the same time.

The

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The fatigue of the body is always accompanied by the fatigue of the soul, and the fatigue of the soul, by that of the body: the one is never unattended by the other; and what is no less strange, the weariness of these two substances is equal in its extreme degree only.

Is the body fatigued to excess, the mind cannot give attention to any object, its perceptions are weak, and as if passive to the objects which are presented, it no longer thinks nor reflects; it recollects nothing, and frequently remembers not the impression received but the moment before; the desires of the soul are weak, it wills nothing strongly, and seems not to retain the power of determining itself; in short, the soul is in a kind of drowsiness, and, as it were, in a reverie which wears outwardly the appearance of meditation. Is the mind fatigued to excess, external objects produce only weak impressions on the senses, and these impressions produce only weak sensations on the soul; motion is painful, and all the organs are in a stupor.

VII. In diseases of the body, we frequently observe reason lost, and a delirium

over-

overtakes the soul; this is evident in the hysteric affection, that terrible disorder which afflicts the fair sex, and is so singular in its symptoms.

Often when the soul is engrossed by pleasure, their gaiety gradually disappears, and a profound sadness succeeds; the sight grows dim, involuntary tears flow, the mouth is half open, every part of the face is convulsed, the limbs lose their flexibility, are violently distended, and the body is strongly contorted: when these violent agitations, which are of no long continuance, cease, an extreme stupor ensues, and the countenance wears the livid hue of death: when the complexion has recovered its colour, insensibly the other extreme succeeds, and the countenance appears inflamed; the pulsation of the temporal arteries is very great, respiration is no longer oppressed, the unhappy patient fetches deep sighs, opens her eyes, and stares wildly round her. She at last recovers her voice; and the disagreeable scene sometimes concludes in immoderate fits of laughter, often in shedding tears, and in shrieks, and always with incoherent talk.

IX. Another proof of the disorder of the mind in diseases of the body, is seen in a case which at present offers itself to my observation.

The gay, the agreeable D——, blessed with the gifts of fortune, the beloved husband of a most amiable woman, was suddenly affected with extreme sadness, the consequence of immoderate venery. Disgusted at every thing as if by enchantment, his soul receives no pleasure from the most agreeable objects; nothing can engage his attention; what he formerly eagerly sought after, he now as eagerly avoids; he shuns company, and betakes himself to solitude, shutting himself up alone in his chamber; sometimes from a pensive silence he starts with terror; at others, he mutters some extravagant discourse to himself; lastly, when sleep has closed his eyes wearied with watching, he enjoys no rest; then hideous spectres appear, he cries out for help, and awakes in extreme terror.

For ever either quite silent or raving, his complexion at times is of a very lively colour, his eyes protuberant, as if ready to start from their sockets, his looks wild, his limbs violently agitated, he vents his
rage

rage on himself, and is ready to tear himself in pieces; his eyes afterwards appear sad, his head reclines on his breast, his arms hang down, his whole body is affected with a stupor, again he falls into a sullen silence and melancholy, bursts into involuntary tears, and fetches deep sighs.

But how many instances have we of this sad truth in those evils to which nature has subjected us? How slight a cause is sufficient to deprive man of reason?

X. A simple wound shall sometimes render the soul delirious.

The unhappy person, who has been run through the body with a sword, feels an acute pain in the wounded part, the pain increases, and is insensibly extended to every part. The body is at first slightly convulsed, by degrees respiration is oppressed, the countenance is inflamed, the eyes are swollen, he stares wildly round him, and his limbs are violently convulsed. This disorder of the corporeal organs is instantly communicated to the soul, every idea is disturbed; in this universal confusion, the unfortunate sufferer knows neither the voice of his friends, nor the features of his parents,
who

who stand round his bed, attempting to awaken sentiment, and recall life.

In these disorders, a foreign power presses on the soul and subdues it, the limbs are in an involuntary agitation, nor can the soul keep down its unruly emotions, or restrain its transports.

XI. To behold the manner in which the soul partakes of the affections of the body, we should almost be induced to believe it material.

In our recovery after a long and high fever, which has consumed the principle of strength, the soul is as weak as the body; the sensations have no vivacity, sentiment is dull, desire languid, and we receive no pleasure from the most agreeable objects; recollection is likewise decayed, and we scarcely remember an action done the moment before: the understanding is principally affected with this languor; with difficulty we compare the most simple objects, we cannot reflect, all the faculties of the soul are in a stupor. The more this disorder of the body prevails, the weaker is the soul; as the organs regain their force, conception gradually

dually returns, and is not in its vigour till the body is perfectly recovered.

XII. Acute diseases are always attended with weak conception, weak remembrance, and weak recollection; chronical diseases are accompanied with the same symptoms; but this decay of recollection, conception, and remembrance, is more sensible in that affection of the *ductus medullæ spinalis*, called the *spina bifida*, when the tumor is opened, and yet more in lethargies.

A considerable loss of the spermatic fluid produces the same phenomena. Hard drinkers commonly become stupid in length of time, and lose all sentiment, remembrance, and recollection.

The unhappy persons who have been obliged to undergo the operation of the trepan, apoplectics, and those who have been restored to life after hanging, remain for a long time stupid, without remembrance, without conception, and sometimes continue for ever after of a dull understanding, and unfaithful memory; not even remembering the pain they felt when they suffered.

XIII. The same effects, which are produced by diseases on the soul, are sometimes produced by violent passions, and sometimes by extreme application. How many are rendered insensible by fear ! How many by too great attention to some particular object !

Tasso, the celebrated Italian poet, became insane by extreme application to study ; in some measure surviving himself, forgetting both his name and his works.

Gallus Vibius, the famous mimic mentioned by Seneca *, lost his reason, by too earnestly applying himself to the imitation of folly.

XIV. Finally, by a kind of prodigy, we observe some persons to lose one part of the powers of the soul, and retain the other : some lose the faculties of meditation, and reflection, without losing the judgment ; others lose the recollection, yet retain the remembrance, as if these different powers of the mind depended on particular organs of the body.

XV. The *Microcephali* have less memory, less brilliancy of wit, less penetra-

* Lib. 2. Controv. 9.

tion than common persons: whilst *Macrocephali* possess these qualities in a very eminent degree; as if the soul were too much confined in the heads of the former, and that the spiritual faculties were ever proportionate to the volume of the organs, in which they reside.

XVI. It is frequently observed, on the relations between the body and the soul, that very corpulent persons have commonly no imagination, no sagacity, no delicacy of wit, they have only good sense. When the degree of corpulency is prodigious, dullness nearly approaches stupidity; the soul then appears to be oppressed by the redundancy of matter.

XVII. The following singular relations between the soul and body, have been constantly verified by experience.

A quick and penetrating mind is ever united to a * sensible and vigorous body; and *vice versa*.

* Let it be remembered, that when I term a body *sensible*, I mean a body endued with an high degree of sensibility.

A profound and sublime mind is united to a body vigorous and strong *. There will certainly appear some signs of a vigorous mind in a man, whose body is sensible and vigorous ; none but those persons only, who, together with vigour, enjoy strength of constitution, know how to deliver their ideas with energy and continued force. Only such could compose the *Pharsalia* of Lucan, the Dramas of Shakespear, and the energetic writings of the author of *Emilius*.

XVIII. If delicate and feeble persons have no vivacity either of body or mind, and if this vivacity of mind ever accompany vigour of body, it is likewise certain, that a body extremely delicate and sensible, is ever united to an erroneous and inconsistent mind ; whilst we see that, on the contrary, a body, which is robust and less sensible, ever contains a mind that is proportionably the reverse.

The body influences the soul several ways ; we not only observe striking rela-

* I speak not here of the extent of our knowledge, or of the number of ideas. I speak of their characters only.

tions between it and our solids, we observe very singular ones between the mind and the circulation of our fluids.

XIX. Whilst the blood circulates with great velocity, man is agitated with a kind of phrenzy, raves, loses his remembrance and reason; his ideas are confounded, and in the universal disorder which prevails in his soul he forgets his friends, wife, children, and even his name.

In proportion as the circulation is less quick, so much the weaker are the motions of the soul; a gentle calm succeeds these furious transports, it recovers recollection and reason, and the thoughts fall again into their natural order.

XX. Whenever the operations of the soul are well performed, and the soul acts with entire liberty, the blood flows with moderate velocity; on the contrary, it circulates with great rapidity in frenzies, in strong agitations of the mind, and when the lamp of wisdom is extinct.

XXI. When the body is violently agitated, it drives rest from the soul; persons in fevers continue sleepless many days; in vain they seek for repose, their firm-

ness is exhausted, and their souls soon yield to a mortal languor.

The relations observed between the state of the body, and the character of the mind, are likewise observed between the state of the body, and the character of the passions.

XXII. A body sensible and strong is united to a soul, susceptible of violent and most durable passions.

A body robust and but little sensible is united to a soul, susceptible of moderate, yet durable passions.

A body delicate and sensible is joined to a soul subject to passions, strong, but of short duration.

A person delicate and of strong sensations is easily kindled into rage, but this is of very short continuance. A vigorous and robust person is not easily inflamed, but his passion when excited is of long duration: the rage of the first is a fire which blazes, and is soon extinguished; that of the other is like the waters of the ocean, which at first oppose great resistance to the fury of the winds, but retain their motion a considerable time when once excited.

Finally,

Finally, a body feeble, and but of weak sensations, is united to a peaceful soul, entirely exempt from ardor, which experiences only the weak impulses of an indetermined will, and knows no more of the passions than their name; and *vice versa*.

XXIII. An impetuous soul is ever united to a sensible and vigorous body: a peaceful soul to a body robust, or endued with little sensibility.

But there are observed yet other relations between the state of the body, and the character of the soul.

XXIV. In chronic disorders, and during a state of convalescence after acute * diseases, the soul is languid like the body, nor can any thing give it pleasure; objects, which delighted before, no longer excite any emotion, the mind is melancholy, thoughtful, and sullen; whilst Man, in vigorous health, is gay, lively and fickle. Excessive loss of semen in the male likewise affects the soul with sadness and languor.

* I mean those acute diseases, which disorder all the functions of the animal œconomy; not those that affect a part only.

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You can hardly know, under that dejected, that pensive and melancholy air, effects of immoderate venery, the man who before was so sprightly and so gay.

The fire which sparkled in his eyes is extinguished; the liveliness of his complexion is gone, and his countenance demonstrates the languor of his soul; the days pass unperceived, nothing engages his attention, his drooping soul sinks into that forlorn state, which is the type of death. Whence does this metamorphosis proceed? From the loss of a small quantity of the nervous fluid.

XXV. Diseases not only render man thoughtful and sad, they sometimes steel the heart and beget inhumanity; for you frequently see persons, who are by nature amiable and gay, rendered by some distemper, restless, suspicious, distrustful, ill natured and peevish; they grieve for the most trifling cause, and are displeased with every thing said or done.

XXVI. The gay seek after agreeable, diverting and comic amusements; the sad, those which are mournful, and of a tragic nature; to these joy is displeasing; they would have every thing wear a face of mourning

mourning * about them, they tell and hear told, with a kind of pleasure, tragic adventures; they shun the company of the gay, and retire to forests, woods, caves, rocks, deserts, and to savage nature, like those reptiles which feed on herbs which are poison to others.

XXVII. Whilst all the functions of our organs are well performed, whilst the fluids circulate within us easily, and with a moderate velocity, the body is in health; in this state the soul enjoys all the vigour it is capable of. Are the functions of the body changed? Is the circulation of our fluids languid or difficult? The body is diseased, man is then subject to great weakness, his powers are inactive, his soul is incapable of any great undertaking, he fears every thing, and attempts nothing.

Man in health is intrepid, without it, he is pusillanimous.

XXVIII. Immoderate coition is attended with the same effects with disease;

* This observation takes place, when the soul is a prey to grief, and before it receives any motive of consolation; but it is never more conspicuous than in men of a melancholy temper.

we

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we moreover observe that males, who have been deprived of the parts characteristic of the sex before they were perfectly developed, ever retain an effeminate disposition, are less vivacious, less brave, and less fierce, than those who have not been mutilated in this manner.

They, who have one testicle only, are less lively, less intrepid than those who have two; they, who have three, are proportionably more lively.

XXIX. But the manner, in which the affections of the soul follow the state of the body, is yet more surprising. When a soldier, in the heat of an engagement, receives a mortal wound, he becomes the more impetuous; at the sight of his blood, he is inspired with a violent passion, and with new force; but he soon perceives his strength to fail, a freezing cold shoots through his veins, all his powers decay, a mortal languor succeeds; his courage fails, and his rage declines as the blood flows from his wound.

There are other relations between the constitution of the organs and the mental character.

XXX.

XXX. Boldness and openness of temper ever accompany strength and vigour of body. To obtain their desires, the weak use stratagem; the strong, open force. This may be observed even among brute animals; the weak practice cunning, whilst the lion goes straight to his prey and attacks it openly.

But between firmness and constitution, we observe relations opposite to those observed between constitution and boldness. A delicate, yet vigorous body, never contains a soul endued with fortitude. Those fine gentlemen, who are so brave at the head of their company, have no firmness when they suffer any acute pain. Women are more courageous, but less firm than men. How many heroes have confronted all the dangers of undaunted war, and yet have shed tears through extreme pain?

XXXI. A very apparent relation between the constitution and mental character is, that weakness of mind always accompanies weakness of body.

Age, infancy and disease, are credulous; women, more than men: they believe in witchcraft, reading of dreams,
pal-

palmeſtry, old wives tales, ſpirits, phantoms, in a word, all the extravagancies of human reaſon.

XXXII. To an attentive examiner, there appears a conſtant relation between the organization of the body and the affections of the ſoul.

The ſoul united to groſs organs, delights in very lively amuſements and noiſy pleaſures : united to delicate organs, it loves calm refined amuſements. Lively colours are moſt agreeable to robuſt men ; ſuch delight in warlike muſick, pungent odours, and ſtrong liquors : delicate perſons on the contrary love light colours, ſoft muſick, the gentle perfumes of the roſe and jaſmin. The ſame obſervation may be made with regard to the pleaſures of the mind ; delicate perſons are averſe to the noiſy amuſements of the robuſt ; they are fond of the ſofter pleaſures, the ſweet overflowings of the ſoul, *têtes à têtes*, and all the enjoyments which ariſe from the tender emotions of the heart.

XXXIII. If a great loſs of ſemen involve the ſoul in ſadneſs, and ſometimes in a kind of ſtupid inſenſibility, the loſs of a ſmall quantity of the nervous fluid weakens

kens the motions of the soul, and turns sentiment into tenderness. After the first enjoyments the lover is without any lively emotion, though in the full possession of that felicity, with which he was inebriated a few moments before. To his former violent transports succeeds a pleasing stillness; his love for his mistress continues, but his passion has lost its ardour; he still presses her to his bosom, but no longer devours her charms; his caresses are more tender, more affectionate, and his mind being entirely engaged by pleasure, views, with delight, those beauties which had so violently enchanted his senses.

XXXIV. If the body strongly influence the soul, the aliments affect it in a manner no less surprizing.

What a power has wine over this immaterial substance! By this beneficent liquor, a calm is restored to our troubled minds, it drives away pain, fear, suspicion, and introduces hope and joy in their stead. By wine, misfortune forgets its evils, and consuming cares give place to pleasing illusions and agreeable ideas. By wine, joy presides at banquets,
gets

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gets possession of the hearts of the guests, and breaks out in songs and merriment.

XXXV. The power of wine is not confined to the inspiring hope and joy; it likewise inspires love, and renders the mind bold and free. The soldier, whom water could not have kept from flight, having drank wine, boldly meets death, and bravely fights. By wine, are begotten witty sallies, and happy turns of expression spontaneously come from the lips; thus wine has been esteemed the *pegasus* of poets, and fable has combined Bacchus with the Paphian queen, regarding wine as a principal support of love's empire.

XXXVI. But if this beneficent liquor, when drank with moderation, relieves our inquietudes, inspires bravery, gaiety and candour; what terrible effects are produced by its excess! Convulsive motions, palpitation of the heart, contortion of the whole body, violent agitations of the soul, fury, alienation of mind, loss of sentiment, of remembrance and wisdom, these are its too common effects.

XXXVII. What power have other aliments likewise on the soul! Let the Man, who burns for amorous embraces, and whose

whose imagination is busied with the charms of the fair sex, be fed for twenty days only with aliments impregnated with acid or nitrous particles; and you will observe his passion to decay with his strength. Give him afterwards gelatinous and spirituous aliments, immediately his imagination is revived and his passion renewed with its former force.

XXXVIII. Aliments affect not the soul by their quality only, but by their quantity likewise.

On rising from a plentiful table, Man is not the same as when he first sat down thereto.

After eating, the pulse becomes quicker, we feel a pressure at the region of the stomach, the body is dull and listless, the mind becomes sad and heavy, it is no longer adapted for meditation, or sallies of wit; we yawn, and at last fall fast asleep.

XXXIX. The effect produced on the soul by excess of wine, is occasioned likewise by a small quantity of the *solanum verum*.

Scarce is it dissolved in the stomach, when the members become convulsed, the gestures

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gestures wild and the looks full of fury; the *Risus Sardonicus* succeeds and tears begin to flow; in the mean time, the wretched sufferer stammers out many extravagant expressions, is furious, and endeavours to bite or tear any object that happens to be near him.

The *semina hyosciami* & *atura indica*, deprive the person that eats them of the use of his senses: he sees not, even though his eyes are open; he hears not, is stupid, without ideas, without sentiment, he is not even sensible of his own existence.

Were I to recount the different virtues of other plants and flowers, which produce similar effects in the soul, and which render the wisest furious, and the most ingenious stupid; I should never have done.

The prospect of nature produces on the soul impressions very different, according to the objects which offer themselves to the sight.

XL. Who can be insensible to the pleasing sentiments which arise in the soul from the prospect of a beautiful landscape, from the view of a fine country, enlightened with the parting rays of the sun in the evening
of

of a serene day? We feel a sudden joy, a satisfaction which cannot be expressed. The rich foliage of the trees, the enamel and perfumes of the flowers, the harmonious chant of birds, and the coolness of the evening breeze, insensibly beget gaiety in the heart, we feel a sweet serenity steal upon the mind, we undergo a kind of enchantment, which it is impossible to resist*.

XLI. As the prospect of a fine country, of a pleasing rural recess, is adapted to inspire us with joy; so the prospect of a dismal desert, is adapted to inspire us with sadness.

Plains without flowers, without herbage, covered with arid sand; trees blasted or obscured with gloomy foliage; enormous masses of rocks divested of verdure and grown black with age; the noise of torrents rushing from the summit of mountains, together with the croaking of ravens and mournful cries of eagles, are hi-

* I know we are not at all times in an equal disposition to receive this joy, to feel these pleasing emotions; there are moments in which we tenaciously retain in the heart some perplexing sentiment of sadness, which we continually carry about with us.

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deous objects, which convey sadness to the heart though all the senses.

XLII. As the prospect of nature, so the air affects the soul in different manners, according to its different temperature.

Is the atmosphere thick and heavy? We feel a sadness at the heart, which vanishes as soon as the air is restored to its wonted serenity. In the most delightful retirement, we are obnoxious to the influence of the atmosphere, and are gay or sad, according as the heavens are cloudy or serene. The air even affects our sensibility and understanding: in cold and dry weather, the mind is much more active, more penetrating than when it is hot or humid*.

Thus seeing that the soul is subject to physical laws, and is under the influence of the heavens and earth, we might be induced to believe that Man is wholly material. Feeble sport of the air, and seasons! The sun and clouds, heat and cold, dry and humid: these regulate his character, the complexion

* Milton's genius was sublime during the first and last months of the year only; at other times, his imagination was oppressed; he was then not superior to other men.

of his mind and his genius ; and he is gay or sad, sagacious or stupid, according to the influence of the winds and meteors.

XLIII. Agreeable sensations not only generate a sentiment of love or of joy in our hearts, they likewise produce a pleasing calm.

If fatigued during the heat of summer, we repose ourselves beneath the branches of a tree, which, by its thick foliage, defends us from the rays of the sun ; employed in viewing the enamel of the meadows and a variety of delightful objects which then present themselves to our sight, the gentle zephyrs with their cooling breezes refresh us, the murmur of brooks, the sweet perfume of flowers, the amorous chant of birds delight the ear, and the whole soul is drowned in pleasure : engrossed by sweet sensations, the mind gradually ceases to contemplate the objects of its delights ; already thought has abandoned it, the other faculties are suspended, and, by an unknown charm, we sink into a voluptuous repose : the body partakes in this enchanting calm ; and, as if it were incapable of watching one moment without its companion, the head

C 2

reclines,

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reclines, the eyes close, and sleep creeps on all the senses.

Let this examination of the influence of the body on the soul suffice; I shall now proceed to examine the influence of the soul on the body.

SECTION II.

Power of the SOUL over the BODY.

If the power of the body over the soul be very great, the power of the soul over the body is very great likewise. By a simple act of volition, the soul moves the limbs either separately or all together. In passions, it affects the body in a thousand different manners; at one time, it contracts either every part at once, or some particular parts only; at another, it relaxes them, and deprives them of their tone, and sometimes it so far agitates our organs, disturbing and varying their œconomy, as wholly to destroy it.

The power of the soul over the body, is as immediate as that of the body over the soul, but not as complete. It has, indeed, a direct power on the organs of voluntary motion, but not on those of
life;

life; if at any time it affect these, it is only indirectly by their connexion with the organs subject to the will, or by the correspondence of the nervous system.

Neither is the power of the soul over the body as continual as that of the body over the soul; the influence of the body on the soul is permanent; the influence of the soul on the body only momentary; and what is surprising, the body is never subordinate to the whole soul, but only to some one of its faculties exclusively.

I shall therefore examine the influence of the soul on our organs in its different points of view, neglecting that of the will, of which I have already treated when discoursing of the mechanism of the human body.

The passions cannot continue confined within the heart: they manifest themselves outwardly in the sound of the voice, in the rapidity of the speech, in the gesture, in the posture of the body, in the state of its functions; and always differently, according to the nature of the motions agitating the soul.

XLIV. Love, whose empire extends over universal nature; that violent and

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tender sentiment, so celebrated by the poets, so well known to lovers, produces strong emotions in the organs of pleasure, excites a gentle heat in the region of the diaphragm *, tender looks, quick pulsation, adds lustre to the eyes, enlivens the complexion, embellishes the countenance, animates the features, and communicates a grace to all our motions.

XLV. In friendship, the soul affects the body in the same manner, the symptoms of the organs of pleasure excepted †, nor is it strange it should, friendship and love being the same affection of the soul, and differing only in their object.

XLVI. Joy produces nearly the same effects with happy love. Whilst the soul

* In those vascular and nervous parts, termed by anatomists *plexus cardiacus*.

† We must not confound friendship with love. Till the time when the organs of sex are perfectly developed, Man knows only the first of these sentiments; he may indeed love a female, but his affection is only such as he has for his friends; it being only by the secret emotions of the organs of pleasure that he has the knowledge of this sweet attraction of the sexes to seek each other's company, and to unite in procreative pleasures.

is under the influence of this agreeable sentiment, the countenance wears a gracious smile, the complexion is lively, the eyes shine with redoubled lustre, respiration is more free, the body receives new vigour, sensibility is increased, and we feel a voluptuous emotion about the heart. Joy, in the same manner with love, embellishes the countenance, animates its features, gives expression to its graces, and vivacity to all our actions; it appears likewise in our motions, the legs, the arms, the head, are diversely agitated, as if the body and soul were not sufficiently capacious to contain its transports.

Such are the effects of moderate joy; when the passion is extreme, they are terrible: an excess of pleasure affects us with languor, stupifies the senses, disorders the motion of our organs, and nearly deprives us of all sentiment; for Man faints through excess of joy, as he does through extreme pain.

XLVII. How different are the effects of moderate joy from those of sadness! Is the soul overwhelmed with sadness? The countenance is pallid, the eyes lose their vivacity, the muscles of the face relax;

we feel a tension in the region of the heart, a weight on the diaphragm; the circulation is impeded and becomes languid, our strength fails us, and all the body is affected with a stupor.

XLVIII. The effects of fear on the body are analogous to those of sadness. In fear, the limbs are affected with a violent tremor, the blood congeals in its vessels, our strength fails us, the use of the senses is suspended, the voice dies away on the lips, languor arrests our motions, our organs are in a stupor, and all their œconomy is disordered.

When fear is extreme, it gives youth the marks of decrepitude*; it extinguishes the lamp of life. In some, this passion has anticipated the executioner and the enemy. The Man who has had his irons knocked off after condemnation to receive a pardon, has been found dead through excess of fear. Another falls lifeless at the sight of an enemy, whom he is going to encounter.

XLIX. If, when the body is extremely agitated, the soul enjoys no repose; so

* The hair of some persons has been observed to turn grey instantaneously through extreme fear.

neither

Of the SOUL on the BODY. 41

neither does the body enjoy any when the soul is strongly affected.

When night has wrapped all things in her sable mantle, Man is not always sure of rest. Whilst all other creatures enjoy the blessings of repose, or seek the gratification of present wants, Man is the only one to whom care denies sleep. The black despair and heart-corroding remorse, which agitate his soul during the day, accompany him amidst the obscurity of the night, will not suffer him to close his eyes, and harass his body continually.

When the soul is strongly affected, want of sleep exhausts the last remains of bodily strength. Thus the tender mother, when her only son languishes on the bed of sickness, passes whole nights and days watching her beloved child, and will admit of no consolation. A prey to grief, she enjoys no repose; her body is exhausted by fatigue, and a mortal languor succeeds.

If every passion makes different impressions on the body; the soul, at once agitated by different emotions, produces likewise on our organs particular impressions, as may be remarked in terror, fear, hope-

hopeless love, and in the other compound passions.

L. The tender virgin who sees her lover struck dead at her feet, at once seized by fear and sadness, continues immovable; a cold sweat flows down her face, her discoloured lips are affected with an involuntary tremor, her cheeks lose their colour, her arms are extended, her tearless eyes are immoveably fixed on the lifeless body; she stands speechless, astonished, immoveable, as if contemplating the greatness of her misery. To see her mournful looks, and to view her in this extremity of grief, who would not imagine her intensitive? Soon her organs become less tense, her pulse concentrated gradually becomes more free, her breast heaves with frequent sighs, she flings herself on the dead corps, bedews it with her tears, kisses those eyes which are now closed in the sleep of death, clasps within her arms his cold remains, and fills the air with her lamentation.

There are cases, wherein the effects of this passion on the body are yet more strong.

In

In the war which Ferdinand made on the queen of Hungary, a young warrior, who had greatly distinguished himself in an engagement near Buda, was carried dead from the field; Rasclac, an officer in the same army, on viewing the body, perceives it to be his own son, grows pale and expires*.

LI. In attention, that is, in curiosity mixed with hope or fear, we are agitated, we hear, we observe every circumstance. At the least noise the heart beats, the eyes are sometimes fixed, and sometimes wandering. Should the object appear, we are seized with a palpitation of heart yet more violent, respiration is obstructed, the voice falters, and the functions of the senses are interrupted.

LII. Anger, that singular affection wherein grief, hatred and desire of revenge are confounded, produces very different effects on the organs, according to the sentiments then affecting the soul. At one time, it spreads a death-like paleness over the countenance, and agitates the body with convulsive motions and involuntary

* See the *Essays* of Montaigne.

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tremors. At others, it gives elasticity to our muscles, lends us new force, and for some moments raises us above ourselves. These impetuous motions of the soul are most strongly expressed in the countenance, the looks are wild and furious, the mouth foams, the voice is interrupted and hoarse, the brow severe, the whole face is inflamed and wears a menacing air.

In rage or excessive anger Man becomes frantic, his motions impetuous, his limbs lose their flexibility, and his body is violently contorted: the soul at that time raises a ferment in the blood, just as impetuous winds rouse the waves of the sea.

LIII. Terror, that painful emotion excited in the soul by fearful exclamations, the cries of fury or the sight of imminent danger, and always compounded of dread of the object terrifying us, and an unconquerable desire to avoid it, produces likewise very different effects on the soul. At times, we feel an universal tremor, an extreme weakness, a general stupor, which disable the body from obeying the soul, and suspend the use of our sensations; the voice falters and dies on the lips, we
make

make many ineffectual efforts to fly, languor prevents us from moving, and this stupor of the organs sometimes, though but seldom, destroys their mechanism. At other times, instead of being thus disordered, this passion gives us vigor, renders us more alert, and endues us with a more than common force.

LIV. And here let us observe, that every violent passion, which begins by increasing the strength of the body, in the end affects it with languor: rage at first makes a surprizing addition to our strength; but this force soon fails us, we experience a weakness, which deprives us both of the will and of the power of making new efforts; at that time, being incapable of any vigorous act, we become languid and dejected.

LV. How different is happy and unhappy love! The hapless fair one, at once possessed with love and filled with despair, consumed with eager desires, and deprived of him who alone can make her happy, abandoned to her melancholy thoughts, condemned to spend her life in bewailing her hopeless passion, and in feeding

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feeding on her own afflictions, at first perceives a tension about the diaphragm, a violent heat in the region of the heart, and a fever is kindled up in her veins. When the heat of her passion subsides, her soul succumbs under its misery, a consuming fire rages within, and deprives her of the sweets of repose, her strength fails her, grief preys upon her bloom and impairs her health. The fire which once sparkled in her eyes is now extinguished, grown heavy and dim, the light seems odious and painful, her limbs tremble and sink under her weight, and she can hardly support herself; the roses and lillies leave her wan cheeks, her forehead is covered with wrinkles, and her face wears the marks of age. Sometimes her whole countenance is flushed with a glowing red, involuntary tears trickle down her cheeks; and so excessive is her misery, that she is wholly engrossed by the sense of her sufferings, and is insensible to every thing besides.

LVI. The violent passions not only affect the œconomy of our organs; they appear outwardly in involuntary motions, and mechanical impressions. The arms, legs,

legs, head, and even the whole body take different positions, according to the different motions which actuate us. In shame, the head inclines forward; in sadness on one side; in pride it is erect, it is drawn back in astonishment, and in hatred and indignation it moves from side to side in different ways. In anger, as in joy, the whole body is agitated with various precipitate motions.

LVII. The passions do not always act in concert; they sometimes act in opposition to each other; accordingly, in these conflicts, they affect the body in different ways.

Observe that man, under some affliction of mind, which he would fain smother within his own breast. In this state, the violence of the motions which actuate him, and the efforts he makes to conceal his trouble, occasion a burning heat, a sensation of heaviness in the head, and a kind of ebriety which makes him scarcely know himself. His eyes sparkle with rage, his countenance is inflamed, he feels an oppression at his breast, which obstructs respiration. Should he, during this inward struggle, meet with any thing which aggravates

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gravates his trouble; unable to resist the emotions of his soul, his limbs are variously agitated, he gives way to his fury, and utters terrible cries with a broken and faltering voice. This frenzy is frequently succeeded by more violent symptoms; whilst the paroxysm lasts, he reels, falls, remains motionless, becomes insensible, and has not even any sense of what he suffers.

LVIII. Although in these different passions the soul affects differently every part of the body, yet in none are they more visible than in the countenance, in none they display themselves with greater energy.

When the soul is calm, all the parts of the countenance are in a state of rest; their union then produces a pleasing harmony, which corresponds with the calm within. But when the soul is agitated, the face becomes a living table, whereon every passion is delineated in the different features with equal exactness and expression.

In joy, the eyes acquire new lustre, the complexion brightens, the brows become more arched, the nostrils expand, the corners of the mouth somewhat recede
from

from each other, the cheeks are gently contracted, and the lips formed into a gracious smile.

In sadness, the eyes become dead and fixed, the pupil is half raised and half hid by the eye-lid, which is a little depressed, the cheeks are pale, the corners of the mouth fall, the lower lip is protruded upwards, the other muscles of the face are relaxed, the visage is lengthened, the eyes are swollen, and dimmed by a copious moisture which is afterwards discharged in tears.

In shame and in modesty, the muscles of the face are contracted, the eyes are turned downwards, and covered with the eye-lids, the mouth is somewhat open, and the complexion of a deeper red.

If every passion is expressed on the countenance by different lineaments, the concurrence of these different lineaments is properly adapted to express the mixed passions.

In terror and affright, the forehead becomes wrinkled, the eye-brows are elevated in the parts towards the temples, and are depressed at the other extremity; the eye-lids are wide open, leaving the

pupil and half the white bare, the lips are drawn back at their extremities, the mouth is open, and all the muscles of the face appear contracted and strongly marked. In contempt and derision, the upper lip is drawn somewhat on one side, so that the teeth appear; in the other is observed a small motion, faintly resembling a smile, the nose is drawn to the same side with the upper lip, the eye on that side is half shut; whilst the other continues unchanged, the pupil of both being depressed as when we look downwards.

Of all the parts of the face, the eye is the most expressive. This is the only organ wherein Man cannot conceal the passion in his breast. The different passions are expressed by a sudden alteration in the eyes; in these appear complacency, envy, rage, fury, contempt, trouble, anxiety, despair, in all their various gradations*. In these too we may read vexation, and discouragement; in a word, every affection of the soul is reflected by these admirable organs, as the images of ob-

* This expression of the eye is owing in great part to the different movements of the *Palpebrae* and the adjacent parts.

jects by a well polished mirror; even the most secret emotions of the heart are manifested by them.

Every one must have observed the restraint of two lovers on the intrusion of a third person. When they cannot freely indulge the mutual emotion of their hearts, what expression! What eloquence in the eye; at that time the sole interpreter of their sentiments! How instantaneously does the soul display itself in the motions of these organs? Their passions, their designs, their hopes, their fears are expressed in a single glance.

But it is time to leave the consideration of the influence of the sensibility of the soul on the body, and to examine that of the understanding thereon.

LIX. Reflection fatigues the mind incomparably more, and much sooner than musing or revery. The exercise of reason is to the soul, what voluntary motion is to the body, a state of contention and constraint.

LX. When the soul is concentrated within itself, and wrapped in profound thought, we perceive a tension in the *plexus cordiacus*, in the membranes of the

brain, but especially in the parts surrounding the eyes. This tension is accompanied with a sensation of heat, which may be removed by the action of the cold air; the pulse is quicker than common, the countenance becomes more florid, and the breast heaves with strong respiration, as may be remarked in studious persons, or in men of strong sensations, when under any violent affection of the mind, and when they are obliged to retire within themselves, to enjoy some secret pleasure or to feast upon their sorrow.

In a more continual application, the mind is affected with a stupor, or a kind of ebriety, the power of the soul on the organs of voluntary motion is diminished, and the will loses its empire over the body.

LXI. How great is the power likewise which the imagination has over the body! How singular the relation between this faculty of the soul and our organs!

It is by this that a good mimic affects the susceptible spectator, and makes him follow his motions, his gestures, his actions mechanically, just as if his body were subject to be moved by the motions of the other.

It

It is by this the idea of delicate meats sets the organs of taste in motion, and, as it is commonly expressed, makes the mouth water. It is by this we experience that insupportable sensation, which we feel when we are touched even on those parts which are the least sensible, with design to excite titillation. It is the imagination, which, inflamed by voluptuous ideas and images, or by the sight of beauty, quickens the pulse, increases the lustre of the eye, excites strong emotions in the organs of pleasure *, and causes palpitation of the heart.

It is this, which in love kindles our desires, produces on the lips of lovers that sensation of a lambent flame, which accompanies their kisses, and renders their touch similar to that of fire.

It is this, which causes that tremor the lover experiences at the approaching enjoyment of his mistress.

It is this which, in the ardour of youth,

* The erection of the *penis* in man, and of the *Clytoris* in woman, are not voluntary motions. This mechanism of the parts absolutely depends on the imagination: how many men are languid and impotent in the company of a woman, for whom they have no affection; notwithstanding every effort of the will, and sometimes every aid of art!

gratifies the voluptuousness of desire, in our dreams.

But the power of the imagination is not confined to any particular organ, it is extended over the whole body. There have been convulsionists, who, by the help of a warm imagination, have raised themselves by degrees to fury: their eyes were inflamed, the face disfigured by a violent contraction of its muscles, the mouth foaming, and all their members convulsed.

However great this power which imagination has over the body may be, philosophers have fancied it much greater than it really is. Not content with the prodigies of nature, they have attributed to it others, which are merely ideal.

Led aside, on one hand, by appearances; on the other, by the love of the marvellous, like the stupid vulgar, they have adopted ridiculous prejudices, and employed their pens in defending them.

We are told of a pregnant woman in Germany, who being struck with the sight of a picture of John Baptist, which hung in her bed-chamber, was afterwards delivered of an infant with its whole body hairy, and some physiologists, treating
this

this absurdity as an assured fact, concluded, that the imagination could change the form of the solids, the features of the countenance, and the colour of the skin.

This opinion was implicitly believed, and is at present universally received. From thence it is pretended, that whatever affects the mother, affects the foetus likewise; that the affections of the soul of the one, act on the body of the other; to this energy are attributed the resemblance of children to their parents, those blemishes on the skin, and all those monstrous productions wherein nature appears to have forgotten the wisdom of her own laws. They even carry their love of the marvellous so far as to assert, that the foetus bears the real marks and representation of the longings of the mother, as of fruits and the like which she may have eagerly desired. But if we attentively examine these marks and blemishes, these pretended signs of the mother's distempered imagination, we shall perceive them to be only sanguine stains, and yellow or reddish spots*,

D 4

more

* These marks are always yellow or of a red or violet colour, tints which the blood naturally gives to
the

more or less strongly expressed, produced by some change in the texture of the skin.
 “ These spots have assuredly some figure;
 “ because every spot must have one, and
 “ this figure must necessarily bear a re-
 “ semblance to something: but they
 “ have neither the form of any fruit,
 “ nor that of any object which the mo-
 “ ther could desire.” I have seen many
 such pretended representations of the mo-
 ther’s longings, but could never observe
 in them any thing more.

By investigating the causes of these pre-
 judices, we shall find, as I have already
 remarked, that erroneous observations only
 could have given birth thereto. Not only
 the facts are false, but even supposing they
 were true, they cannot be produced by
 the causes to which they have been attri-
 buted.

I will not say, to prove this, that as our
 sensations resemble not their objects, it is
 impossible that desire can produce physical

the skin; when it enters in too great quantity into its
 vascular texture, and when it is more or less fluid,
 thick, or bilious, and likewise according to its mixture
 with the nervous fluid, or some other of the liquors of
 the body.

repre-

representations of those objects ; I have more convincing proofs to adduce.

The soul affects the body undoubtedly in every passion, and always differently, according to the diversity of its emotions ; but it has been evidently demonstrated, that the soul has no influence on the body, but by the nervous fluid ; that this power over the body is reduced to the dilating or contracting our solids, to the accelerating or retarding the oscillatory motion of the organs of circulation in different degrees, sometimes even so as to destroy the motion of the whole machine ; and that it has no other power over the fluid of the nerves, but to alter its quality and deprave it, that is, to render it caustic or destroy its energy. Now the empire of the soul over the body which it inhabits, being thus limited, can it be more extensive over a body to which it is not so closely united ? For it is well known, that the *fœtus* has no direct or immediate communication with the mother ; whilst it is in the womb, it is inclosed within membranes, which adhere not to the *uterus* in the first months of pregnancy, nor is their adhesion very great when pregnancy is farther advanced.

The

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The placenta being connected to the uterus by papillæ on the external part of the membranes inserted into the small foramina of this organ and joined by a mucilaginous matter, which possesses so small a degree of adhesion, that it scarcely *appends* to the matrix; the *fœtus* therefore, in some respects, is intirely independent of the mother.

It has been for a long time believed, that the blood of the mother passes into the body of the *fœtus*, by means of the *placenta* and *funis umbilicalis*; it has been supposed likewise, that the blood vessels of the uterus open into these foramina, and the vessels of the placenta into these papillæ, and that their vessels communicate with each other. But experience has convinced us of the error of this opinion; for, by injecting the arteries of the *funis umbilicalis*, the liquor injected wholly returns by the veins, nor does the least part of it escape into those parts, with which they are supposed to communicate. Besides, we may easily detract these papillæ from their foramina, without producing any efflux of blood, either from the uterus or the placenta, there being discharg-

ed from one to the other a lacteal fluid only, which serves for nourishment to the foetus.

The foetus therefore has nothing in common with the mother but this nutritive lymph. They have distinct and separate organs and functions ; nor has the mother any influence over the foetus, but by means of this liquor. Every alteration of this nutritive, received from the mother, is therefore communicated to the foetus : if it be corrupt, the solids and fluids of the foetus are so likewise ; but the fluids of the mother cannot otherwise affect it. It is not therefore to the imagination of the mother that we must attribute those resemblances, those mutilations, those duplicities of parts, those cutaneous blemishes which infants bring with them into the world, and which have been commonly regarded as true representations of the depraved appetites of women, during pregnancy.

LXII. Let us conclude with one important observation. If we compare the power of the different faculties of the soul over the body, we shall be convinced, that this power is not equal in every one :
that

that of sensibility is much greater than that of the understanding, and this much greater than that of the will. If the powers of these faculties be not equally great, so neither are they equally extensive. Those of sensibility and understanding are universal; they extend not only to the nervous fibres, but also to the fibrillæ of which they are composed, that is, to the organs of sense and those of motion: the empire of the will, on the contrary, is confined to this latter, since those two faculties can augment or extinguish our vigour, whilst the will can only extend our organs and contract our muscles.

Such is in general the influence of the soul on the body, and of the body on the soul; such the reciprocal relations of those two substances.

Although these relations are very evident, many of them have escaped observation; and of those who have observed any, the greater number have been content with only observing them. Some philosophers have attempted in vain to account for these phenomena: others, disgusted at the ill success of the former, have regarded them as impenetrable mysteries,

teries, so that every one is satisfied at present, with simply observing and admiring this influence; they cry it up as prodigy, as if we were prohibited to pass beyond the line which those sages have drawn; they likewise attribute their ill success to the nature of the discovery, rather than to the erroneous methods which they have employed in pursuit of it.

After the vain efforts of so many great geniuses, notwithstanding so great a combination of prejudices, and the ridicule inseparable from such an undertaking, I will venture to attempt the explanation of these mysteries, enter this dark labyrinth, sound this immense abyss, and carry light into those regions of darkness: I shall assign the reasons of this prodigious influence of the soul on the body, and of the body on the soul, display the unknown principles of their relations, and determine the laws of these phenomena; in a word, reduce to fixed principles a science, wherein every thing is yet hypothetic, obscure and mysterious.

B O O K IV.

WHEREIN THE INFLUENCE

OF THE SOUL ON THE BODY,

AND OF THE

BODY ON THE SOUL,

IS ACCOUNTED FOR.

THE union of the soul with the body is subject of much admiration; for in what manner can two substances, so different from each other, be united? How can matter act upon the mind, or the mind upon matter? This is a mystery impenetrable to human understanding. Who is so presumptuous as to undertake the explanation? Human reason can never conceive the first principles of this intimate union, of this primitive correspondence of the soul with the body: let us not seek to know after what manner two beings, so different in their nature and properties, can act on each other; we must admit the fact simply, since it is unquestionable, but the cause is wholly unknown.

Yet

Yet these different substances have singular reciprocal relations, and these relations themselves must needs have causes and principles. These principles, hitherto unknown, I endeavour to discover and demonstrate; those relations, hitherto obscure and incomprehensible, I attempt to account for.

This subject appears at first sight incomparably more difficult than those we have treated of already: in these we arrive at truth, by a direct and short way; in the other, on the contrary, concerning which we have hitherto only vague and absurd conjectures, and where demonstration appears to be impossible, we may pass from hypothesis to hypothesis, and blindly pursue truth in the ocean of opinions, without ever attaining it. Yet this is not so difficult a task as it appears. The influence of the soul on the body, and of the body on the soul, being invariably the same, in the same circumstances, in every individual, and the relations of these two substances being similar, they are therefore the effects of causes which operate in a fixed and invariable manner. As the phenomena are subordinate to certain laws,

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laws, to discover those laws we must ascend from the effects to the cause, following the chain of the principal phenomena, collecting similar facts, comparing and examining them, selecting the properties they possess in common, from those peculiar to each. Only by this method we can arrive at those causes; without it, the mind wanders in darkness, perpetually fluctuating between prejudice and probability, ignorant of the principles of things, and ever confounding the opinions of men with the laws of nature. Such is the method I shall pursue in the investigation of the causes of the reciprocal influence of the soul and body. I shall therefore collect the chief phenomena, compare them, select those which are similar, and endeavour to present to the mind a certain number of analogous facts in a single point of view. I shall likewise attempt to discover their identity, and the cause of their analogy; and finally, draw from the assemblage of these different combinations, light sufficient to investigate the causes and laws of the admirable harmony subsisting betwixt the soul and the body,

so

so as to conduct us to the important knowledge of Man.

These topics being so complicated and so different in their nature, I shall be under a kind of necessity to pay my principal attention to the great and leading objects, reducing the phenomena to some general heads, avoiding to descend into minute particulars, a labour as troublesome to a writer as it is unprofitable to his readers, who are thus continually put to the trouble of collecting them, whilst, after all, they receive only confused and imperfect ideas of the subject. Besides, the mind fatigued with a multitude of objects, loses itself in the perplexity of its own thoughts, and throws a darkness on that which it endeavours to elucidate. I shall therefore confine myself to the solution of the phenomena, collecting them into one general point of view, disregarding those minutiae or particular questions, which might cause me to lose sight of the main scope, interrupt the thread of the subject, and rob demonstration of its evidence.

I shall likewise endeavour to present my ideas in an order equally easy to comprehend, and interesting to pursue.

I am sensible how much my system would be improved by an abler pen; but if, notwithstanding the mediocrity of my talents, I can render it acceptable to the reader, by the mere force of that evidence which attends it, I shall both think the opinion I have endeavoured to establish better grounded, and my satisfaction will be the more complete.

SECTION I.

Influence of the SOUL on the BODY.

WHEN the soul is affected by any sentiment, it instantly affects the body, always in the same manner in every individual, and ever differently according to the nature of its emotions.

The soul has no direct power over our corporeal organs; the soul and body are distinct beings, without any necessary connexion, and are united by the nervous fluid only *. Thus, in whatsoever manner these substances reciprocally affect each other, the soul never acts on the body, nor the body on the soul, without the

* See the article on the structure of the nerves, Book I.

intervention of this fluid, and never without some impulse being communicated by one to the other *. On the impulse communicated to this fluid, on its different degrees of force, combined with the elasticity of the fibres, and the different organs affected, depend the different phenomena observed in the influence of the soul on the body. Let us apply this principle to the effects of the passions on our organs.

In joy, the countenance acquires a more lively colour, the eyes sparkle with an unusual lustre, and the face wears a perpetual smile; a gentle emotion is felt in the regions of the heart and *plexus nervosi*; respiration is more free, circulation more easy and quick; we receive fresh vigour, all the functions are more perfectly performed, and the whole body is full of life.

As the joy is more violent, these effects are more strong; the arms, legs, head, every member is strongly agitated; the body can scarcely contain itself.

The vivacity of the complexion, the lustre of the eyes, the liberty and force of

* See the Art. on the action of the soul on the fluid of the nerves, Book I.

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the circulation, the freedom of respiration, and the vigour of the whole body, clearly evince, that in joy the soul forcibly impels a large quantity of the nervous fluid into the organs of motion. This impulse of the fluid of the nerves into these organs, occasioning a small intumescence of the muscular fibres *, and slightly compressing the fluid which is contained in the fibrillæ whereof they are composed, gives them the whole of their organic elasticity; yet causes not the least degree of rigidity. Hence the muscular motion is ample and strong, the heart and the arteries forcibly impel the blood into the smallest capillaries, and thus communicate to the skin that slight intumescence, which then so greatly conduces to beauty, and to that clear and lively colour, which is so greatly ornamental. The humours of the eye receive a fresh supply of spirits, and their tunics are more fully distended, whereby they reflect a greater quantity of rays, and acquire greater lustre. In the muscles of

* These fibres are the particular organs of motion, as we have already explained when treating of the mechanism of the human body, under the Art. on the structure of the muscles, Book I.

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the cheeks, this impulse is principally to be seen, being then supplied with a larger quantity of the nervous fluid, they gently contract, and with the help of the lips express an agreeable smile.

But if the fluid of the nerves, instead of causing a slight intumescence of the muscular fibres, should violently precipitate itself in great quantity, as it happens in extreme joy; the fibres, being then too greatly distended, cannot re-act, but they oppose a too great resistance to the elasticity of the fluid contained in their fibrillæ. These fibrillæ are therefore in a state of rigidity, their fluid is inactive, and the entire organ without organic elasticity.

Hence the reason why excess of pleasure stupifies the senses, affects the body with languor, and even destroys the action of our organs, when this state of rigidity is extreme.

But in moderate joy, although the soul is not affected with sufficient force to occasion a rigidity of the fibres, these emotions of the soul produce no durable impressions on the body; this singular vigour, this flourishing state of the machine is of no long continuance, and languor imme-

diately succeeds. This is easy to be conceived, however strange these phenomena may appear: for the vigour we experience whilst affected with joy, springs only from the strong influx of the nervous fluid into the organs of motion; this fluid ceases to be determined thereto, when the soul ceases to experience these agreeable emotions; the fibres thus distended, decrease and collapse when the fluid with which they were distended is dissipated, and our muscles are without either tone or elasticity.

It is by a similar mechanism that the handling of the breasts of females deprives them of their globular swell; it excites a voluptuous emotion in the soul, and inflames the imagination, which determines the spirits thither in great abundance, distends their fibres, increases their volume, and gives them greater firmness; but as this determination of spirits is not continual, if the handling be repeated, when this supply has ceased, the breasts presently collapse and lose their solidity.

When the soul is overwhelmed with sadness, the complexion becomes wan and pallid, the eyes dull, a tension is felt
about

about the diaphragm, the head inclines forwards, the arms hang down, unable to support their own weight, the whole body is affected with languor, we sigh, the eyes are suffused with tears, sighs are repeated, and tears flow in abundance.

The greater the affliction, the more evident are these its effects; there is a point to which this passion is capable of arriving, and where its violence sometimes extinguishes the lamp of life.

If in joy the soul gives a greater elasticity to the muscles, by determining thereto the fluid of the nerves with impetuosity and in abundance; on the contrary, in sadness it appears to relax the same organs, causing them to collapse, by withdrawing the energetic fluid.

But this is nothing but appearance only; all effects of the soul on the body in this passion, as in all the others, are produced by the influx of the nervous fluid, determined into different ducts. In joy, the fluid is impelled from the brain into the cavities of the muscular fibres. In sadness, it is impelled into the fibrillæ of which these fibres are formed, and which we have shewn to be the proper organs of sense.

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sense. In this case the nervous fluid distends the fibrillæ, increases their diameter, compresses that of the fibres, and destroys the equilibrium, causing it to incline to the fibrillæ: hence only a small quantity flows at that time into the organs of motion, and even that can have but little action.

Hence proceeds the weakness of the muscles, the languid action of the organs, the paleness of the countenance, the diminished vivacity of the eyes, and the stupor then affecting the whole body.

These are however only the effects of a moderate impulse; when this impulse is violent, it occasions an extreme rigidity of the muscular fibres*; this rigidity instantly produces a total cessation of the functions of the body, and consequently death.

But to conceive the effects of sadness properly, we must distinguish those which

* This rigidity may likewise be produced by the irritating quality of the nervous fluid, contracted during this passion. But it is evident that nature does not take this method: for in sadness, relaxation immediately follows this rigidity; whereas the irritating quality of the nervous fluid would have produced a permanent rigidity.

accom-

accompany the impulse of the nervous fluid into our organs, from those which succeed it.

The rigidity of the muscular fibres is the immediate effect of this impulse, but to this rigidity immediately succeeds an equal degree of relaxation. The universal tremor affecting us upon hearing of any misfortune, the paleness of countenance, the difficulty of respiration, the oppression of the diaphragm, concentrated circulation, and the general stupor of the whole body, are evidently the effects of a slight rigidity of the fibres. The feebleness of the motions, the decayed lustre of the eyes, the relaxation of the muscles, the lax state of the skin, and the languor of all the functions of the body, are the consequences of that inelasticity which necessarily succeeds this rigidity. Hence it appears, that rigidity and relaxation are the causes of all the phenomena produced by the influence of the soul on the body in sadness.

Hence Man, in violent affliction, is subject to extreme weakness; hence silence and consternation are the language of the soul when strongly affected; as are cries and tears, when moderately worked upon.

Curae

Curæ levis loquuntur, ingentes stupent.

Hence extreme pain deprives us of sense, of motion, and of life itself.

Although the soul affect the whole body in different passions, yet it affects not all its organs equally: at one time it acts most upon these, at another upon those; but the soul principally exercises its power on the *plexus cardiaci*.

These plexus are united to the most considerable blood vessels, such as the trunks of the vessels of the stomach, liver, spleen, heart, and mesentery, which they line with their ramifications. They have likewise a direct connexion with the brain and organs of sense.

In sadness, when these plexus are violently contracted, they forcibly compress the trunks of the blood vessels which they surround, causing the blood to be collected in them, and even occasioning a total stoppage of the circulation.

Hence that compression of the heart, that pressure about the diaphragm, those syncopees accompanying the paroxysms of extreme sadness, and hence even death, which sometimes ensues.

But

But when these ramifications of the nervous plexus are only slightly contracted, as in moderate joy, they slightly compress the vessels round which they are wound, but principally the veins, whose coats oppose the least resistance; hereby the blood in circulation is somewhat restrained, particularly in its return to the heart.

Hence the emotions we experience in joy in the region of the diaphragm, and that liveliness of complexion which always accompanies it.

When the emotions produced on the *plexus nervosi* have a certain degree of force, they communicate to the diaphragm, to which these plexus are united by the diaphragmatic nerve, a transient convulsive motion which produces bursts of laughter; for laughter, which is a sound suddenly interrupted, and frequently resumed, is always produced by a tremor of the diaphragm. This motion of the diaphragm affects the lungs, which it precipitately elevates and depresses; every time the lungs are depressed, the air is expelled through the mouth, with a certain noise; this

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this is that sound of the voice, which is so often repeated in laughter.

That sudden starting likewise, and internal constriction, which we experience when we first begin to think of some evil affecting us, is produced by the contraction of the diaphragm, which participates of the nature of the spasm affecting the *plexus nervosi*. This constriction of the diaphragm raises the lungs, and occasions that strong expiration, called a *sigh*. Whilst the soul continues to think upon any sorrowful subject, it communicates different motions to the plexus, and sighs are frequently repeated. But when new impulses succeed immediately one after the other, the air rushes suddenly, and by intervals, into the lungs, produces frequent expirations, and every expiration occasions a sound stronger than sighing: this sound frequently repeated is what is commonly termed *sobbing*.

When the spasms begin gradually to diminish, the air is not expelled so readily from the lungs, expiration is repeated at greater intervals, and produces a louder sound, called *groaning*; for a groan is only a continued sob. Finally, when relaxation

ation succeeds to these spasms, tears begin to flow.

Tears are lymph, distilled from the lachrymal glands, situated in the orbit above the lesser canthus of the eye.

Each gland has six or seven ducts, which pass between the membranes of the eyelids, and open into one common orifice near the *cilia*. From this orifice distills a saline lymph, which is absorbed by the *puncta lachrymalia*, and discharged by its proper duct into the nose. But these glands express not this liquor till they begin to relax after contraction: hence is the reason why moderate grief causes tears to flow, and why excessive grief suspends them.

We commonly regard tears as a sign of sadness, but without reason. They are the effects of every passion which contracts our fibres; fear, anger, and even joy excite them, as well as sadness and pity.

In fear, as in sadness, there is an universal tremor, a constriction of the heart, pallor of the countenance, sinking of the muscles, relaxation of the skin, imbecility

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cility and stupor. These similar effects are produced by the same mechanism.

Hence lovers, overpowered by their good fortune, remain inactive during the night of their marriage, and recover not their vigour till their astonishment is dissipated.

Hence extreme fear suspends tears, and moderate grief abundantly excites them.

Hence fear chills us, stupifies our organs, and arrests our motion.

When fear is extreme, the nervous fluid, being violently precipitated into the fibrillæ which form the muscular fibres, destroys the equilibrium between the resistance of these fibres and its action, interrupts the regularity of the organs of motion, and even at times disorders all their functions.

Hence that tremor and numbness, which deprives us of the use of our limbs: hence the reason why a rope-dancer cannot perform those feats at the height of thirty yards, which he performs with ease at the height of fifteen feet: why some persons walk without danger over the roofs of houses, whilst asleep; whereas they would

would have fallen had they been awake, and sensible of their danger.

Hence the bird, which with its warbling cheers the night in the spring season, when it perceives the viper beneath, attentively watching to devour it, an extreme tremor seizes its feeble organs, a languor deprives them of motion, till at length it can no longer support itself, but falls, as if by enchantment, into the open jaws of that deadly reptile.

I have said, that the effects of sadness on the body are similar to those of fear; there is however this difference between them. In fear we almost always perceive a palpitation of heart, which is not perceived in sadness. This difference is wholly to be attributed to the greater or less interval, which passes in these passions; between the different impulses of the nervous fluid into our organs; and to the greater or less impetuosity of these impulses.

When fear is moderate, the soul is successively affected by the same sentiment at very short intervals, and at every reproduction of this sentiment it impels into the nerves (particularly into the plexus nervosi)

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vofi) a fresh supply of fluid, which produces a slight spasm; the blood vessels are likewise successively obstructed by the ramifications of the plexus which surround them, and the circulation is at intervals interrupted. When the spasm ceases, the blood is violently impelled into the heart, which then becomes overcharged; whereby the circulation is rendered irregular, and the pulse feeble and intermitting. Hence proceeds the cause of this tension at the region of the diaphragm, and of this palpitation of the heart.

In love the eyes glister, the complexion is more lively, we feel strong agitations in the organs of pleasure, a heat in the region of the heart, and an increase of vigour in the whole body.

From the analogy between the effects of love and those of joy, it is evident, that in love the soul abundantly supplies the organs of motion, and principally the *plexus nervosi* with the nervous fluid, and more especially the plexus with which the arteries are interwoven: for the heat, which we then experience about the heart, is produced by the arterial blood collected in this part, by the slight contraction of the
rami-

ramifications of the plexus which envelope these vessels.

The soul very singularly affects the organs of pleasure, in love; it even appears, that these organs are the principal scene of the effects of this passion.

These parts have, it is well known, an intimate correspondence with the *semilunar plexus*, one of the *plexus cardiaci*, by means of the spermatic vessels; the nervous fluid is abundantly supplied thereto, animates the *musculi erectores penis*, produces strong agitations in these parts, and gives the whole organ that tension, that turgidness, so necessary to the design of nature, and to the pleasures of love.

In friendship the soul affects the body in the same manner as in love; the organs of pleasure however experience no particular emotion; except this, the state of the body is equal, and its mechanism is the same.

Hatred produces effects contrary to those of love. When that passion is extreme, at the sight of the object of our aversion we feel a sudden tremor of the whole body, a weight on the diaphragm, a stupor of all our organs, and a tension of

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the muscles of the face, paleness covers the countenance and the eyes wander.

These effects are analogous to those of fear, and are produced by the same causes. Hence ugliness renders us impotent; whilst beauty, on the contrary, inspires new vigour in the combats of love.

In the compound passions, the influence of the soul on the body is the same as in the simple. This may also be affirmed of its mechanism. Hence the effect of these passions is the sum of the particular effects of the different sentiments which unite and are confounded therein.

But these passions must produce different effects, according to the relative force of these different sentiments.

Hence in terror, when fear predominates, we experience all the effects of this passion, that numbness which deprives us of the use of our senses, that languor which brings us back to the state of infancy, that stupor which disorders the action of our organs, and sometimes prevails so far as to destroy it. When it is moderate, its impressions on the body are very slight, nor can we distinguish them from those of the desire of self-preservation :

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servation: the soul at that time impels the fluid of the nerves into the organs of motion, as in joy, increases their vigour, and augments their elasticity.

Hence that force which is produced by the sight of danger, the last efforts of a sensible and intelligent being, who endeavours to defend life, or assure his own happiness.

Rage produces likewise different effects on the body, according to the nature of the sentiment then reigning in the soul.

In sentiments of hatred and sadness, which are the most early in their effects on the body, the soul forcibly impels the nervous fluid into the fibrillæ of the muscular fibres, extremely dilates their tube, contracts that of the fibres, and renders them somewhat rigid. Hence the diameter of the vessels is diminished, and the circulation so imperfect, that the blood is not impelled to the arterial capillaries; hence the pallor of countenance and stupor of the limbs. The *plexus nervosi* are likewise violently contracted, and particularly the diaphragmatic nerve; hence that pressure at the region of the heart, that weight which then so grievously af-

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fects the stomach, and nearly destroys respiration.

But these effects are not of a long continuance; to the sentiments of sadness and of hatred presently succeeds a strong desire of revenge, which afterwards reigns singly in the soul; the nervous fluid is then forcibly impelled into the muscular fibres, whereby their diameter is greatly enlarged; this influx likewise compresses the fluid of the fibrillæ, augments their elasticity and enlivens the muscles.

By the same principle, the nervous fluid produces in the vascular system an aptitude to the most powerful oscillation; the blood is thereby impelled to the extremities of the cutaneous capillaries, and into the organs of motion, which it renders susceptible of vigorous action: hence the impetuous motions of rage, and the prodigious force of phrenetics. Such is the manner in which nature, who has established between individuals different degrees of power, sometimes renders weakness equal to strength by means of despair.

This influx of the fluid of the nerves into the fibres produces in the
plexus

plexus nervosi, especially in the ramifications wound round the trunks of the veins, a small degree of rigidity; these vessels are thereby somewhat obstructed, and the return of the blood to the heart is attended with difficulty, whilst it is carried from the centre to the circumference with its usual freedom: the vessels are thereby greatly distended at the surface of the body; whence springs that redness of countenance, that fire of the eyes which ever accompany rage.

As this influx of the nervous fluid into the organs of motion is instantaneous, these organs are not affected with a degree of tension equally violent or equally durable; the ease and perfection of their motion is thereby necessarily destroyed: hence the tremor of the whole body, the hoarse, loud and interrupted speech, ever observed in anger.

The passions, which are founded on hatred, add force to the natural strength of Man; but this additional vigour is only momentary, and rage, as the other violent passion, having elevated Man for a few moments above himself, reduces him to an equal degree in the opposite extreme.

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On one part, weakening the fibres by violent distension and contraction, it diminishes their primitive elasticity; on the other, exhausting by reiterated efforts that fluid which is the principle of vigour, it affects the body with extreme weakness, which destroys both the power and the will to make any future effort.

I leave to the curious the examination of the effects of the soul on the body in the other passions, the explanation is simple and easy, by pursuing the principles here established.

The passions produce very singular effects on the body, and display themselves by some outward mark or other to the attentive observer; but they are no where so apparent as in the countenance. In the passions, the face is the living tablet whereon every emotion of the soul is represented with equal energy and force.

By removing the teguments of the face, we observe it to be composed of a great number of small muscles, which adjoin to and unite every part by their tendons. These muscles form all the expressions of physiognomy, and display every affection of the soul. The repose of all the muscles

cles expresses serenity of mind, and their different motions, its different passions.

In the same passion, the same muscles are always contracted, and that in the same manner in every individual. When the soul passes rapidly from one sentiment to another, the features they form by their contraction are successively effaced; but when the soul is habitually resigned to any one passion, the features are constant, and become the characteristics of the physiognomy.

Every part of the face contributes to the beauty of the whole, but every part contributes not to its expression. Beauty consists in harmony and regularity of parts; physiognomy in their motion. The nose, though the most protuberant feature of the face, contributes the least to physiognomy, it having very little motion. For the same reason the ears, the chin and the temples contribute less to physiognomy than to beauty. On the contrary, the lips, the mouth, the cheeks, the eye-lids and the eye-brows, conduce much to expression, by the different appearances they assume. But no part is more expressive than the eyes; in these admirable organs,

the soul principally appears; in these it expresses the most tumultuous emotions, and the most agreeable sentiments; in these it expresses them in all their force, in all their purity, and displays, by the most energetic lineaments, the image of its secret agitations. The cause of this phenomenon may, without difficulty, be discovered.

As the eye is formed of many nerves, or rather, as it is only a large nerve expanded, and as it abounds with nervous fluid, to this organ therefore the impressions of the soul must be principally determined. It being likewise very contiguous to the brain, and moreover diaphanous, the power of the soul must be there less weak and more apparent: hence it is evident, that the passions will be represented in this organ with the greatest energy.

The power of the understanding over the body is exercised by the same mechanism as that of sensibility; that is, ever by an impulse communicated to the nervous fluid. By determining a greater quantity of this fluid to the nervous fibres, it produces a greater degree of tension;

sion; thus it happens to all our muscles, to the *plexus cardiaci*, and especially to the *meninges* during meditation. This increase of the organic elasticity of the fibres strengthens the oscillatory motion of the vessels, and renders the circulation more rapid. When meditation is deep in the extreme, this tension of the fibres is extreme likewise, and the circulation becomes vehement; the contraction of the nervous plexus enveloping the blood vessels, at that time arrests the arterial and venous blood: whence arises that heat and those anxieties, which ever accompany profound application.

By impelling a greater quantity of fluid into the nervous fibres, the soul renders them more sensible, and prepares our organs to contract at the slightest impression. Such is the method imagination uses to strengthen our sensations.

Hence arises that intolerable sensation which is produced by the touch of others, with a view to excite titillation. Hence is the cause of that tension of the organs of pleasure, which arises from the sight or idea of lascivious objects, and of those emissions which are experienced when the
influx

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influx of the nervous fluid into the *musculi erectores penis*, and the *vesiculæ seminales*
is very rapid.

This fluid, when determined to the organs of digestion and salival glands, by contracting them, excites the secretion of saliva and gastric lymph. Such is the method by which the imagination, from the sight of delicate meats, occasions the same motion in the organ of digestion, as when they are supplied with the aliments themselves.

But if at any time the imagination impel this fluid into the muscular fibres, it at other times determines it to their fibrillæ, produces there a degree of rigidity, which destroys the action of the muscles and disorders the whole body.

Hence those shiverings, that imbecility, which sometimes render us unable to consummate the work of love.

The passions not only display themselves in the countenance, not only dilate and contract the fibres; but the arms, the legs, the head, nay, the whole body, assume different postures, according to the different sentiments affecting us. By exciting the same sentiments, actors and mimes

mics communicate to us their port, their gesture, and their action.

The influx of the nervous fluid into the fibres of the nerves and muscles or into their fibrillæ, a small degree of tension, rigidity or relaxation of these fibres or of these fibrillæ, are therefore the true and sole causes of all the phenomena of the influence of the soul on the body.

But for what reason does the soul impel the nervous fluid into the muscular fibres, rather than into their fibrillæ? Why into one organ or muscle rather than into another? Why in shame does the head incline forwards, in sadness and in languor, on either side? Why in love do the organs of pleasure experience strong emotions exclusively of others? Why does imagination, excited by the ideas of exquisite meats, affect the organs of digestion rather than those of love? By what means does the soul, in the different passions, impel the nervous fluid into any particular nerve, any particular muscle, or any particular organ exclusively; whilst every part of the body partakes of nerves, which are common to all, whose fibres are ever exposed to the influence of this fluid

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fluid which incessantly pervades them? These singular relations between particular faculties of the soul and certain organs of the body; this surprising correspondence *, which has been so little attended to, is to me an enigma, an incomprehensible mystery, which I relinquish entirely to any one who is willing to undertake the solution of it, if it can be accomplished by the human mind.

Let us here conclude with some important observations on the influence of the soul on the body.

Every different emotion of the soul affects the *plexus nervosi*, which appear to be the principal organ wherein the passions exercise their power. There we feel that inexpressible anguish, which pity excites in the heart, when we hear the groans of the unfortunate, or the cries of the oppressed; there fear and terror intrude their terrible anxieties; there joy introduces its

* Another phenomenon equally surprising, which has not been more attended to than those already mentioned, is the faculty, which the soul possesses un instructed by experience, of discerning whence it receives its sensations.

sweet transports, and there the soul leaves its most durable impressions *.

All the passions domineer in the soul ; but the body, particularly the *plexus nervosi*, is the wretched theatre of their conflict.

Sentiment is only a transient emotion of the soul, which endures only whilst the understanding is fixed on the object by which it was produced ; sentiment, when produced, is sometimes so early extinguished that it escapes attention.

The soul possesses the power of fixing our sentiments at pleasure, it sometimes preserves them in opposition to the will. When a passion is agreeable to us, we entertain its object exclusively, and the soul is delighted in its contemplation ; let us then be ever so willing to attend to other objects, pleasure constantly attaches us to this only ; the love of happiness, ever present to the mind, always determines it to that which administers delight.

* The nervous fluid, impelled by the soul, is precipitated in great quantity into their narrow and delicate tubes, distends them, and sometimes ruptures their coats, which are too weak to surmount its resistance.

Thus

Thus the unhappy lover, separated from his mistress, looks languishingly around him, and incessantly engrossed by the beloved object, takes no interest in others; sweetly melancholy, he seeks silence and solitude, where, without interruption and free from importunate cares, he indulges his delightful revery, and resigns himself wholly to the contemplation of the object he loves.

The will and the love of pleasure, can fix any particular sentiment in the soul; but when they fix none therein, when the mind chooses to lose sight of importunate objects, and begins to neglect them, it is the physical cause which detains us with that upon which we are then engaged. It is the sense of the impression produced on our organs, and principally on the plexus nervosi, which recalls us thereto. It is this which, amidst sports and entertainments, calls back the unfortunate to their grief and tears.

It is therefore only by aid of the impressions produced on these *plexus*, that the transient emotions of the soul become permanent, that they acquire any duration in our hearts after their causes have ceased,
that

that they consume us, and continually prey on the mind, even in despite of ourselves.

It is likewise by aid of the different impressions of sentiments on the body, that contrary passions appear to be co-existent in the soul.

Let us however observe, that as these impressions are produced in contrary passions by opposite causes, they are commonly destroyed one by another; when, of the series of different sentiments to which the soul is resigned, the last becomes the most powerful: but how strong or how feeble soever these impressions may be, they mutually weaken each other. Hence we never observe, at one time, on the physiognomy, the violent transports of joy, and the destructive languor of despair, although we frequently discover sadness veiled with a gentle smile.

SECTION II.

Influence of the Body on the Soul.

Sensibility, desires, passions, remembrance, recollection, wit, talents of every kind, even the most inferior qualities of the soul, are different in every individual.

Arc

Are souls, then, in their nature, different? Are there as many species of souls as there are of men *; or are they the same and unvaried in all men? This mysterious truth is equally unknown to the learned and unlearned. It is a secret impenetrable to Man, and known only to the great Author of Nature. But as we are able to account for the diversity of souls by the difference of bodies to which they are united, and by the different circumstances of individuals, the possibility, even the facility of a physical explanation of the diversity of characters, passions, minds, induces us to believe, that souls are not essentially different from each other. But were souls different in their nature, their diversity would be of no effect, so long as they continue united to the body: when once entered therein, they instantly become subject to physical laws, and receive their character from organization †. Let us examine in what manner the body characterises the soul, and to what the varie-

* Pope's Essay on Man.

† Character is to the soul what physiognomy is to the countenance; it is what distinguishes one soul from another.

ties observed between men are to be imputed.

Authors who have hitherto treated this subject, not considering the dignity of their undertaking, have, instead of investigating the laws of the influence of the body on the soul, employed their imagination in the invention of new ones; instead of labouring to discover the causes of phenomena by their effects, have confounded the whole; by attributing to the body the properties of the soul, they have made the faculties of the thinking substance so many corporeal faculties, which they have distributed to particular organs, viz. *the nervous fluid and the fibres of the brain*: by the motion of these fibres, by the modification of these organs and of this fluid, they have accounted for ideas *, prejudices, desires, passions †, intrepidity, courage, memory and thought.

By attributing to the brain functions so sublime, by regarding this viscus as the organ allotted for the production of ideas, as formed to represent the series of intel-

* See Bonnet's Palingenesie. Haller's Physiology, &c.

† See Le Cat's Treatise in the Sensations. Buffon's Natural History, &c.

lectual operations by a series of particular fibres and fibrillæ differently modified, these sages have supposed, in opposition to facts*, a particular construction which it has not, an admirable structure superior to all we can conceive or imagine, where the Deity can read as in a book the different thoughts of Man. Some have even strained the marvellous, or rather the ridiculous†, to measure the volume of the medullary substance, and to determine the number of ideas which a grain of the medulla contains. Having made the desires, passions, memory, imagination, &c. merely corporeal faculties; having given to each of these organic fibres a marvellous structure, they have tortured their minds to apply them to the different phenomena,

* Although we cannot perceive the cavity of the fibres which form the substance of the brain, its structure and its use are however very well known. It is undoubtedly a compound of many extremely small vessels, whose direction is visible, allotted for the secretion of the nervous fluid from the blood. This supposed marvellous structure of the brain can serve no purpose, if we restore to the soul those qualities which are without reason attributed to that organ.

* Robert Hook in the Philosophical Transactions.

but

SOUL and BODY accounted for. 99

but finding themselves unable to make any just application, they have made one which is absurd and unintelligible: by these forced and puerile explanations, by occult causes not in the least satisfactory, they have involved in darkness that which they desired to explain, rendering themselves ridiculous in the opinion of men of genius, and unintelligible to inferior capacities.

Every one hitherto has fallen into these errors, and, as if it were impossible to arrive at truth, has neglected that which alone could conduct him thither. But if, amidst so many successful enquirers, a few attained to the discovery of some truths, they knew not how to improve them, they only guessed, not demonstrated.

Thus, ignorant of every true principle, they undertook to explain these phenomena, but not being able to complete their design, abandoned it, imputing their inability to the intricate nature of the subject. So that hitherto no advantage has been obtained from any observations made on the influence of the body on the soul, towards forming a fixed and regular system. Every thing as yet writ-

100 RECIPROCAL INFLUENCE *of the*
ten on this subject is vague and absurd ; I
shall therefore endeavour to dispel this
darkness, or rather attempt to reduce this
science to its principles.

C H A P. I.

*Influence of ORGANIZATION on the AP-
FECTIONS.*

EVERY mind is endued with the same
faculties; in this respect, all are similar:
but these faculties are more or less exten-
sive, more or less susceptible of improve-
ment, and some have their peculiar propen-
sities; but in these, all minds vary. This
diversity is wholly produced by the body.

*The Sensibility of the SOUL ever Propor-
tionate to that of the ORGANS.*

There is a constant relation between
the sensibility of the soul and that of the
body, a determinate invariable relation.

Is the body endued with great sensibili-
ty? The soul is so likewise: does it pos-
sess but little of it? The soul ever pos-
sesses it in the same degree.

The cause of this phenomenon is very
simple.

How-

However sensible the soul may be in itself, the measure of that sensibility is undiscoverable by us, and is, in fact, wholly obliterated, even supposing the mind to have been pre-existent to the body, and that all its faculties were active before its union with matter: for the soul being once united to corporeal organs, there remains not the least vestige of its former state, every thing is forgotten. When united *, the soul receives no sensations but by the body; like a sheet of white paper, whereon objects are represented after having passed through different intervening mediums, the soul receives its sensations by the organs of sense; its sensations therefore are founded on impressions made on the body. But as the sensibility of the soul is a purely passive faculty, the different degrees of which are not known to us by any immediate method, and as the sensations of the soul are all founded on those of the body; the vivacity of the sensations of the soul therefore depends on that of the sensations of the body. The sensibility of these two substances must be equal.

* See Book II. Art. of the unfolding of the faculties of the soul.

Thus the degree of the sensibility of the soul depends on purely physical causes*.

Why the Sensibility of the SOUL appears more powerful than the Sensibility of the BODY.

The sensibility of the soul is ever proportionate to that of the body, and the sensations are ever more strong at the instant they are received from the object, than when remitted from the memory†. Hence it appears, that the most powerful artificial pleasures, the most lively paintings of the imagination, must necessarily be weaker than the impressions of the senses. However, when we compare the representations of fancy with those of nature, the brilliant paintings of love in the *Adonis* of *Marini*, with the merely physical pleasures of that passion, we are much more strongly affected by the former than by the latter.

Whence arises this phenomenon? It is not that the sensibility of the soul is more strong than that of our organs, as might be inferred from these examples; but that

* See Book I. Art. the organs of sense considered with regard to their different degrees of sensibility.

† See Book II. Art. on the exercise of the memory.
the

the senses, in their enjoyment, being ever confined to their objects, can neither add to, nor take from them; whilst the imagination being free in the choice of its colours and its lineaments, incessantly passes from object to object, selecting that which is most brilliant, and most engaging, and from thence forms its images, as the bee its honey from the most delicious parts of flowers. The lineaments which are dispersed in sensual enjoyments, are collected, or rather concentrated in our imaginary pleasures, and acquire force from this concentration, as the rays of light collected in the focus of a mirror.

The paintings of imagination must therefore appear more powerful than the pleasures of the senses; although they receive their whole force from the sensations of the body.

Why MAN is more sensible to Pain than Pleasure.

Painful sensations affect us incomparably more strongly than the agreeable; for violent pain destroys all sensations of pleasure, but the most powerful sensation of pleasure cannot silence a strong sensation of pain.

However surprising this phenomenon may appear, it is not difficult to assign the cause of it.

Notwithstanding we are ignorant of the mechanism of the sensations, it is however certain, that their force is ever proportionate to the affection of the nervous fibres of which their organs are formed. In the agreeable sensations, these fibres are slightly affected; it may be said, that objects of pleasure pass only gently over them; whilst, in painful sensations, the same fibres are violently compressed, are ever rendered extremely tense and often broken.

Hence Man is less sensible to pleasure than pain; hence more strongly affected by the representation of Tartarus than by that of Elysium; hence the attraction of pleasure, the pleasingness of hope, always yield to the fear of torment and to the horror of despair.

Why the Character of the SOUL is ever congruous to the State of the BODY.

There is a constant relation between the disposition or humour of Man, and the constitution of the corporeal organs.

Is

Is the body affected with disease? The soul is sad. Is the body in health? The soul is gay. Is the former in vigour? The latter is vivacious. Is that languid? This is so too.

Sadness, gaiety, vivacity, languor, these dispositions, these sentiments, are experienced by the soul often when it is ignorant of their subject, ignorant even of their source. Like two harmonic machines, the soul constantly corresponds to the state of the body; the same phenomenon is observed at all times and in all places: the light does not more regularly follow the revolutions of the sun, than the soul the revolutions of the body.

Let us explain this phenomenon.

Although the sensations be not the cause of the passions, and although no mechanism whatever can produce in the heart a sentiment of sadness or of joy, it is nevertheless a law of nature, that when some particular sensation is received, some particular sentiment should arise in the soul; that * pleasure should excite joy, and pain sadness.

* See Book II. Art. origin of our sentiments.

Pleasure and pain spring from three different sources,

From external objects, by the senses.

From ideas, by thought.

From the internal parts of the body, by the general organs of feeling.

The agreeable and painful sensations which arise from the two first of these sources, are momentary ; because the senses are not always affected, nor is the understanding constantly in exercise : but the soul constantly receives sensations from the third source, if it be only that of the state of the body.

Joy and sadness, sentiments which have an immediate relation to agreeable and painful sensations, must therefore prevail in the soul in proportion as the one or the other of these sensations results from the disposition of our organs.

The impressions of pleasure and pain, which we receive from the two first sources, are the cause of those transient fits of exultation and sadness, which we so frequently experience, whose subject is ever known ; those, we receive from the last, are the cause of that gaiety and sadness with which we are at all times more or less affected,

affected, frequently imperceptibly to ourselves, but much oftener without our knowing their principle: these form the basis of the humour of Man.

Whilst the body is in health, whilst all the functions are perfectly performed, and the fluids circulate with freedom and ease, this motion of the fluids produces on the *plexus nervosi*, which envelope the vessels, an agreeable sensation, a slight and vague emotion, more easily felt than described: this sensation passes into the soul by the nerves: hence joy, which springs from pleasure and incessantly accompanies it, must necessarily arise therein together with this agreeable sensation. Thus gaiety and good humour are necessary attendants on health.

On the contrary, are the functions of the animal machine disordered? Are our fluids too dense, too acrid, in too large or too small a quantity? Is their circulation violent or difficult? The disorder within, produces in the soul a disagreeable sensation, ever accompanied with sadness.

When all the functions of the animal machine are easily performed, Man is gay;
when

when with difficulty, he is melancholy and sad.

When an easy or irregular performance of the functions is the natural state of the body, we are gay or sad by constitution. But as easy circulation results from the equilibrium between our fluids and solids; as this equilibrium may be easily destroyed in a machine so complex and so feeble as the human body, incessantly exposed to shocks from external objects, from the impulse of fluids penetrating it in every part, often so pernicious in their nature, and almost always with so little proportion to its delicacy, it may be easily conceived, that the state which produces gaiety, must seldom exist; but that which produces sadness, very often.

That voluptuous sensation, which arises from the easy motion of the organs, is likewise much more restrained than the disagreeable sensation which springs from a defect in their harmony. The former varies very little, because one cause only produces it; the latter, on the contrary *, is
of

* When this equilibrium is destroyed and the fluids prevail, the blood circulates with difficulty; we then
feel

SOUL and BODY accounted for. 109
of different kinds, and each kind is differently diversified. Thus the gay character is ever uniform, whilst the melancholy humour has as many gradations, as are found between the slightest and deepest melancholy.

Although the voluptuous sensation, produced by the perfect state of the functions of the body, be single in its kind, it has however its gradations. As this equilibrium between the solids and fluids is more or less perfect, the agreeable sensation which results from it is more or less powerful, and the gaiety of temper more or less apparent.

The sensations therefore of pleasure or pain have their different degrees; but these degrees approximate insensibly; there is a point where these sensations are so greatly weakened, that they are no longer distinct, but become confounded one with the other. This point depends on

feel a kind of stupor and indeterminate pain, like that which men of pleasure experience when exhausted by enjoyment. When it is destroyed, and the solids prevail, it forms that sense of agitation we call inquietude; add to this every kind of pain accompanying the diseases and infirmities attached to nature.

that

that disposition of the body, which constitutes uniformity, or rather serenity of temper; an indecisive character, and so much the more indecisive, as these sensations are the more confounded.

Finally, as the mechanism of the body, to which these sensations of pleasure or of pain, which are the source of a melancholy temper, are to be imputed, is changeable, so the temper varies likewise. Observe however that the agreeable sensation, which depends on the perfect state of the machine, can be easily destroyed; whilst the disagreeable sensation, which results from the primitive constitution of the solids, is in the other extreme. Thus it is not unfrequent that gaiety yields to sadness, but a melancholy temper seldom gives way to mirth.

Hitherto we have discoursed of the temper only; let us examine that vivacity and that languor of the soul, which ever accompany the vigor or languor of the body, one of which wears so strong an appearance of gaiety, and the other of sadness.

We must consider the languor of the soul, less as a weak degree of sadness, although

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though it has all the appearance of it, than as a state of indetermination, wherein Man possesses not sufficient power to determine himself. Objects ever remain the same; they likewise act on our senses by the same mechanism: but whilst the body is affected with a languor, their impression on our organs * is much weakened by the deficiency of the organic elasticity of the fibres. Thus weakened, the sensations communicate an impression, too feeble † to excite any strong emotion in the soul.

There is a surprising relation in Man, as in every other animal, between sensation, sentiment and action. External objects act upon the senses, the senses modify their impression, convey it to the soul, and the soul consequently re-acts on the body. Thus in the animal œconomy, the action of external objects on the senses is ever succeeded by the re-action of the soul on our organs. The one is the cause, the other the effect; this cause and this

* See Book I. Art. the organs of sense considered with regard to their different degrees of sensibility.

† I shall hereafter demonstrate, that the sensations and sentiments, when re-produced, are not more powerful.

effect

112 RECIPROCAL INFLUENCE *of the*
effect are ever proportionate. The gesture of the body, the tone of the voice, the rapidity of the speech, and every mechanical motion, by which the soul externally displays its emotions, have necessarily a force proportionate to the vivacity of these emotions.

In voluntary motion the same relation is observed.

Man cannot see his own good without making some efforts to obtain it, nor be exposed to any evil without attempting to avoid it, and that ever with an ardor proportionate to the greatness of the good he seeks, and of the evil he would avoid. Thus when the vigor of the body decays, the sentiments are destitute of vivacity.

The first cause of the languor and vivacity of the soul is in the organs, which receive the impression of external objects; the second in the soul, which experiences this impression, and re-acts upon the organs. In the former case, these impressions on the body have but little effect on the soul; in the latter, the emotions of the soul have but little effect on the body.

The force of the sensations of the body, and of the emotions of the soul, is ever abso-

absolutely necessary to the vivacity of the temper and character, but these causes alone are not sufficient; for the soul and the body are without any immediate communication. Thus, however powerful the sensations of the body, and the emotions of the soul may be, they are ineffectual, when not propagated reciprocally from one of these substances to the other. The nervous fluid being the medium of communication between these two substances, it follows, that the impulses, transmitted by either, are very much modified by the action of this fluid; and their force is ever in proportion to the vivacity of this action.

Whilst the body is languid, this action is feeble; for the same causes which produce the vivacity of the impressions of objects, continue it whilst it is propagated; and the same causes, which are necessary to transmit to the soul the vivacity of the sensations of the body, are so likewise, to transmit to the body the vivacity of the emotions of the soul.

Hence *Macrocephali* are more vivacious than others, and *Microcephali* less so.

Hence, likewise, extreme fatigue seems to extinguish in our hearts all sentiments and desires. Hence, after a considerable hæmorrhage, the emotions of the soul are * without vivacity, and when our strength is dissipated, we feel only the gentle emotions of an indecisive will; hence rage and courage decrease with the blood. When enquiring into the causes of vigour of body, and of the force of sensations, I proved, that three causes contribute thereto †, the primitive elasticity of the fibres, the large diameter of their cavity, and a sufficient quantity of the nervous fluid. These concur to produce that vivacity of our desires and actions, which forms the sprightly character; whilst the lax texture of our fibres, their small diameter, and a deficiency of the nervous fluid form the effeminate and indolent.

Such are the causes of that analogy, of that harmony which is ever observed be-

* See Book I. pag. Art. of the necessity of arterial blood to motion.

† See Book I. Art. the organ of sense considered in regard to their different degrees of sensibility.

tween the temper of the soul and the organization of the body, or, so to express myself, between the state of the body and the state of the soul.

Hitherto we have seen in what manner the body characterises the soul; but the influence of the corporeal on the immaterial part in Man, ends not

In what Manner the Disposition of the BODY varies the Prospect of NATURE.

The soul is ever in a disposition analogous to that of our organs: this I have already proved: it has likewise been shewn *, that there is a constant analogy between the impression of external objects and the internal disposition; that those objects are pleasing and agreeable, when the soul is affected with joy; much less so when it is affected with grief: consequently the mechanism of the body changes the prospect of nature, the reason of which has been already assigned.

* See Book II. Art. Some singular phenomena explained, concerning the effect of the passions on the understanding.

Organization renders the Temper constant.

Although the temper be variable, it nevertheless is not equally subject to change in every individual. We have seen how the state of the body forms its character; but the heart has other sources of joy and sadness than these.

If the soul experiences agreeable or painful sensations, which arise from the state of the body, it likewise experiences others which are independent of it; these must change its natural state, when they are contrary to those which are transmitted from the general organ of feeling, and with so much the more force, as they have greater vivacity. The soul united to a sensible and vigorous body must therefore be of a temper the most inconsistent: but more especially if it be not determined by the constitution of the body; for at that time the sensations affecting it preserve all their energy, and as if it had no character, its temper varies with the impressions it receives.

On the contrary, vexations change not the temper of the gay; such feel them
only

only as slight pains, which ceasing, the soul re-admits the sweet impressions of pleasure *, and instantly re-assumes its wonted gaiety.

On the other hand, pleasure makes very slight impressions on the sad ; constantly concentrated within themselves †, they are sensible only to grief, and never admit any strong impulse of joy.

Thus, by diffusing their colours over objects, our sentiments acquire longer duration ; joy contributes to perpetuate joy in the heart, and sadness to perpetuate sadness.

The mechanism of the body, therefore, in characterising the temper, contributes likewise to fix it.

Organization renders MAN volatile or thoughtful ; talkative or silent.

If we observe the influence of the passions on the body, we shall perceive, that joy shews itself externally by precipitate

* See Observations 24 and 46, Book III.

† Ibidem.

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motions * ; on the contrary, sadness renders the limbs motionless, and appears immoveably † fixed in the heart. This latter recalls Man's thoughts within himself, whilst the former continues to act outwardly : thus organization, by fixing the temper of the soul, renders the gay volatile and unsettled ; the sad reserved and thoughtful.

Organization renders MAN morose, cruel, communicative or benign.

Sadness incessantly centers the mind within itself. “ He whose thoughts are
“ wholly on himself, and who separates
“ his interest from that of others, knows
“ neither pity nor generosity.” Thus that organization*, which renders Man sad, renders him likewise obdurate and cruel ; that which renders Man gay, on the contrary,

* See Book III, Observat. 46 and 47.

† Ibidem.

‡ It is not my design to exclude the influence of moral causes on the character of men. What I undertake in this work, is only to show how organization characterises the soul.

renders

renders him communicative, benevolent and compassionate. The disposition of the organs likewise produces these effects by another principle; for to the sad, ever centered within themselves by the sentiment of their own misfortunes, nature appears covered with a gloom, all their ideas are mournful and melancholy: if they speak of happiness, it is to complain of the want of it; they seem never to have enjoyed any of the pleasures of life.

The sight of the happy causes the melancholy sufferer to feel the full weight of his miseries; it increases his sufferings, by irritating his sensibility, and wounding his self-love. Thus he is grieved at the sight of those pleasures he cannot enjoy, and is envious of that felicity which flies from him and is possessed by others; he would willingly see all beings groaning around, and tormented with him: as if the number of his sufferings were diminished by those which he inflicts upon others *, he

* This is a kind of consolation by which self-love beguiles our grief.

takes delight in disturbing their pleasures, poisoning their happiness, and becomes cruel and malevolent*.

How different the joyful Man? The soul ever engrossed by agreeable sentiments, pleasing images, flattering ideas, is but seldom afflicted; sadness has but little power over a mind so disposed: ever ready to take all things in good part, its affliction must be very severe, if it be obliged to grieve. Thus that disposition of the organs, which produces gaiety, gives at the same time an amiable character to the soul, and likewise generates benevolence.

The Man of a gay disposition, being contented with his lot, is unenvious of others, and so far from desiring to render their lives unhappy, he endeavours to prevent their being so; not from pity to them, but from love to himself: his heart overflowing with joy, reluctantly supports whatever would afflict it, and hastens to remove every painful impression, which either prevents its amusements or interrupts its natural gaiety.

* This is the cause why affliction hardens the heart, and why misfortune generates cruelty.

Orga-

Organization renders MAN suspicious and mistrustful.

I cannot quit a subject so extensive: the simple disposition of the machine which characterises the temper, characterises the human heart in so many other respects, that it seems to be inexhaustible.

The sad are suspicious and mistrustful; they imagine every person that approaches them ready to deceive: in proportion as their grief is more acute, their suspicions are increased, and nature is covered with a darker veil.

Whence does this proceed? We are not, as is commonly done, to account for it, by saying, that mistrust is natural to a deceitful mind, and that no one can be suspicious who is incapable of deceiving. This maxim is true with regard to men absolutely ignorant, but not with regard to those who have been instructed by experience: besides, we have no proof, that the sad are less just than the joyful; on the contrary, if we observe misanthropes, souls gloomy by constitution, we shall find,

find that plain dealing is one of their characteristic qualities; we know with what liberty they indulge themselves in offensive expressions, and how little trouble it gives them to speak the most disagreeable truths.

It is not in that so often repeated maxim, but in the state of the body, that we must look for the cause of this phenomenon. External objects ever take their colourings from the sentiments which the soul at that time experiences, and it has been demonstrated, that the prospect of nature is in the mind only: now that particular organic disposition which produces a melancholy temper, occasions likewise loss of vigor. Weakness and pain generate sadness and timidity, and from these two dispositions of the soul united, naturally result mistrust and suspicion: for the feeble, being more obnoxious to danger than the strong, more assiduously seek to avoid it, are more provident and better prepared against snares, obstacles, and every kind of evil. On the other hand, the sad collect in their minds every difficulty, exaggerate subjects of fear, easily despair,
and

and believe every thing to be gloomy around them.

Besides, the pensive character of the sad, and the natural succession of their ideas, incessantly exciting in the mind thoughts analogous to the sentiment of sadness then present, creates obstacles, objections, subjects of fear and terror.

Organization characterises the AFFEC-
TIONS.

There is a constant determinate relation between the organization and the affections of the heart.

In the languor of disease, the prospect of Nature excites no emotion: the amorous chant of birds, the cool refreshing breeze, the enamel of flowers, no longer transport the soul; insusceptible of joy, the image of pleasure charms it no more. At that time, therefore, we are feebly determined to action *, and if roused there-

* See Book IV. Art. Why the character of the soul is ever congruous to the state of the body.

to, are unable to continue; we sink under it, and sigh for repose. But when the fibres are sensible, elastic, and abundantly supplied with the nervous fluid, the smallest objects make strong impressions on the organs, and forcibly affect the soul. The soul at such time can re-act on the body with equal vivacity, and the repression of its emotions is as ungrateful as action in the preceding.

The soul, when united to a sensible and vigorous body, is therefore inactive, and less patiently endures inaction than exercise; but when united to organs composed of lax fibres, it is indolent and effeminate.

The soul, united to gross organs, loves lively amusements and noisy pleasures; to delicate organs, refined pleasures and peaceable amusements.

Brilliant colours are pleasing to robust persons; such are passionately fond of warlike music, penetrating odours and spirituous liquors. Persons of delicate texture and great sensibility, on the contrary,

SOUL and BODY accounted for. 125
trary, love light colours, soft music and
sweet odours. In the pleasure of the
mind the same diversity appears; the deli-
cate and the sensible, fly those noisy a-
musements in which the robust and vigo-
rous so greatly delight; they love refin-
ed enjoyments, the sweet effusions of the
mind, têtes à têtes, and every plea-
sure which arises from the tender union of
hearts.

The cause of this phenomenon is, on
one hand, the relation observed between
the sensibility of our organs and the force
of the impression of objects; on the other,
the organic disposition which characterises
the temper.

With the impressions we receive from
objects, constantly concur two analogous
sentiments of the soul; love, with a-
greeable sensations; and hatred, with
painful.

All men seek pleasure and fly from
pain; in this they all accord: but we
never seek objects but from the relation
which they have to ourselves, that is, from
the

126 RECIPROCAL INFLUENCE of the
the degree of pleasure they can commu-
nicate.

The sentiments of love and hatred
must therefore change with these rela-
tions.

A weak sight, or rather an eye ex-
tremely sensible, delights not in glar-
ing colours; such being prejudicial to
it. A delicate ear, delights not in vio-
lent noises for the same reason: what-
ever is injurious to the senses, is pleasing
to no one. On the other part, every be-
ing loves to be sensible of its own exist-
ence. Thus, whenever any one avoids
too violent sensations, he seeks those on-
ly which have a certain degree of vi-
vacity.

Hence the soul, which is united to gross
organs, being too weakly affected by gen-
tle and delicate sensations, loves those which
are violent and strong; such as spirituous
liquors, glaring colours, the sound of the
horn, trumpet, drums, and all kinds of
noisy amusements: whilst the soul, which
is united to a delicate and sensible consti-
tution,

SOUL and BODY accounted for. 127

tution, delights only in gentle sensations, tender colours, expressive music, in a word, in every kind of refined and delicate pleasure.

But in these relations between the affections of the soul and organization, there is a more than simple proportion between the force of the impression of objects and the delicacy of the senses; for many moderate pleasures are devoid of tenderness, and a great number of amusements which cannot be classed with the noisy, excite no gentle emotion.

What then determines the soul, which is united to delicate organs, to tenderness? It is the constitution of the body, but considered in another point of view.

I have demonstrated, that the state of the body, which renders the temper gay, likewise renders Man a lover of dissipation; whilst that, which renders it melancholy, renders him pensive. But that disposition, in which the functions of the organs are easily performed, and is the medium between vigour and imbecility, affects

126 RECIPROCAL INFLUENCE *of the*
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SOUL and BODY accounted for. 127

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affects

128. RECIPROCAL INFLUENCE *of the*
affects the soul with an agreeable languor,
which pleasingly allures it back within it-
self; such is the state of the body after
the moderate loss * of spirits; such is the
last stage of convalescence when it just
borders on perfect health, and such is
the habitual disposition of bodies which
are delicate and sensible. The gentle lan-
guor we then experience, and which is a
disposition to tenderness, conveys to the
soul an agreeable sensation with which we
desire to be affected, and which we che-
rish in the heart. Hence we delight in
every thing which tends to preserve it; as,
affecting music, amorous discourses, and
every pleasure productive of tenderness
and love.

But the affections of the soul are deter-
mined by the organization in a manner yet
more particular.

The prevailing passion, in those affec-
tions of the soul which have a physical ob-
ject, is ever fixed by that sense which is

* See Observation 33. Book III.

the

the best constituted, and by the most sensible organ. He whose organs of pleasure possess sensibility superior to that of his other senses, is libertine and lascivious. He whose palate, or rather whose tongue, is the most delicate of his organs, is a drunkard or a glutton. He whose hearing is exquisite, is passionately fond of music.

I have said, that the reigning passion is ever determined by that organ which is the most sensible: this is evident, since Man seeks pleasure with an ardour proportionate to its vivacity. But if, of these enjoyments which he attains, one part exclude another, he ever prefers that which is the most engaging. The more sensible the organs, the greater the pleasure; for we can at all times proportion objects to the senses when too delicate; but we can never proportion the organ to objects when it is deficient in sensibility.

The gay love joy and seek comic or mirthful amusements; the sad, on the contrary, delight only in those which are
sad

sad and mournful; they delight to relate and hear related tragic adventures, shun gay company, fly to deserts, woods, caves, gloomy forests, and savage nature.

It is easy to conceive why the gay delight in joy, this being of itself agreeable; but by what caprice do the sad delight in sadness, in tragic and mournful amusements? If we attentively consider it, we shall find the cause of this surprising phenomenon in the disposition which the soul receives from the body, combined with self-love. I have said, that we seek after those things only which have some relation to ourselves; this is true in more than one respect. The sad by constitution, being incessantly affected by a disagreeable sensation, vexed that he is only conscious of his existence by his sufferings, envious and jealous of what he does not possess, and what if he were possessed of, he could not enjoy, hates those who are less unhappy than himself; and by a natural consequence, shuns all society

ciety where there is the least appearance of gaiety. The idea that himself is not the only miserable being, alleviates his torments; the thought that others participate his sufferings gives him ease; thus he recounts tragic adventures, and is pleased at the sight of another's misfortunes. As the only pleasure he can enjoy is that of afflicting the happy, and as the only mean he possesses of relieving his own misery, is the indulging himself in reflecting on the sufferings of others, he flies to solitude, to savage and desert nature, where he may, without interruption, indulge the gloomy reflections of his soul. Thus the physical sways the moral part in Man, and the constitution of the body generates the affections of the mind.

I shall now prove, that the force and duration of these affections depend wholly on mechanical causes.

The relations, which are observed between the sensibility of the body and that of the soul, are likewise observed between the state of our organs and the character of our sentiments.

The force, the vivacity, the duration, the violence of the sentiments of the soul, are all of them effects of organization.

The sensations are undoubtedly not the cause of the passions ; but sensibility is the measure of their force ; for the desire of being happy, which blindly leads us in quest of pleasure, and prompts us to fly from pain, ever carries us thither with an ardour proportioned to the greatness of the good we pursue, or of the evils we avoid.

As the degree of the good and of the evil is ever determined by that of sensibility, the passions must draw their force from the organization ; the sensibility of the soul being ever determined by that of the body.

There is a surprising relation in Man between sentiment and action. He cannot perceive his good without making some effort to acquire it, nor be exposed to evil, without attempting to avoid it. This I have already observed, but there is a necessity of repeating it here. If it be evident, as undoubtedly it is, that Man ever
yields

SOUL *and* BODY *accounted for.* 131

yields to sentiment, and that the degree of the good and the evil is determined in every individual by that of sensibility, it is plain, that the more sensible Man is, the greater efforts he will make to enjoy that good, or avoid that evil.

But this relation between sentiment and action is not restrained to voluntary motion; the action of external objects on the soul is ever followed by the re-action of the soul on the body. Unable to restrain the emotions agitating it within, the soul displays them externally by impressions purely mechanical, and ever with a force proportioned to that of its sentiments. Thus in the violent passions, we are ever transported with strong and precipitate motions; but when all is placid and quiet within, all is calm and serene without.

Yet the man, who is ardent in his desires, is not ever impetuous in his actions. Vivacity of motion supposes only great organic elasticity of the fibres: impetuosity requires not only great organic elasticity of the fibres, but force and solidity of the organs likewise.

The duration of a passion is determined by its objects. The sensual are ever momentaneous : those, which have some natural want for their cause, continue not after this want is supplied ; the others are not more durable. But those, which are produced by the imagination, are incomparably more constant ; they reign throughout the day, and disappear not at night ; they attend us when we retire to rest, and reign in the mind when all the senses are locked in sleep. This duration of the artificial passions, so long when compared to that of the sensual, depends on the organization combined with the nature of their different objects.

It is the property of our pleasures mutually to destroy each other, on enjoyment, and to have no continuance without the assistance of novelty. The objects of sensual pleasures are extremely confined, compared to those which are imaginary ; for the first are determined by nature, whilst imagination, ever active, can incessantly modify its objects, and present them under new appearances. Moreover, in
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the sensual passions, the sentiments which then engage the mind, are felt only by means of external objects; when these objects cease to act, the sentiment immediately becomes extinct. Thus in sensual love, the sweet emotions of the soul, and the spirits, are lost together: but in the artificial passions, the heated imagination exaggerates objects, adorns and embellishes them; the soul, seized with an enthusiastic ardor, affects the body with strong emotions, and thereby retains its tender sentiments, even when pleasure is extinct.

Nature cannot long support the violence of an extremely active passion; the sentiments forming this passion vanish, and instantly re-appear. The cause of this phenomenon is physical. In every passion, whilst the soul is fixed on its objects, the * organs are tense; this is observed even during sleep, when the commerce of the soul with the body appears to be interrupted. In the agitation of a troublesome

* See Observation 6, Book III.

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dream, the pulse becomes quicker, the complexion more lively, the body is variously agitated, Man awakes and finds himself in his bed, exhausted by fatigue, and wet with sweat and with his tears. In the passions, tension of the body ever accompanies tension of the soul. This tension of the sentient substance is not only determined by that of the organs of the body, but wholly depends on it; for when the body is affected with languor, the soul receives no strong sensation, it is insusceptible of it *.

Let us then conclude, that if the soul cannot long sustain very strong emotions, it is because the fibres of the body cannot endure great tension for any length of time.

The violent passions consist in a series of sentiments, which are interrupted, one instant, and renewed the next; the succession of these sentiments is perceived only at intervals.

* See a preceding Article. Why the character of the soul is ever congruous to the state of the body. Book IV.

The duration of each particular sentiment, and that of their total successions, depend on the organization. For if the soul always requires the mediation of the body, to receive any strong sensation; if it be unable to fix itself without the concurrence of the other; it plainly appears, that the duration of every strong emotion of the mind, and that of all these emotions which are successively experienced, depends on that faculty of the body, whereby it continues tense a longer or shorter time; a faculty dependent on the different degrees of organic elasticity and solidity of the fibres.

Thus the soul, which is united to strong and elastic organs, is subject to violent and durable passions; that which is united to delicate organs, unable to endure long continued tension, passes incessantly from one impression to another; and never experiences any which is lasting.

In the violent passions, the soul is truly passionate, only when engaged with its objects; when it ceases to be affected thereby, the passion expires; yet the same

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internal disposition continues, even when the soul is engaged with a new sentiment. The cause of this phenomenon has been already shewn to be in that impressi^on*, which sensibility produces on the body, and which in its turn, from an effect becomes a cause, preserving in the soul the sentiment which produced it, and recalling it there, if at any time its object disappear.

But this impressi^on which the passions produce on our organs is not equally durable in every individual. The more strong these emotions are, so much the more apparent is this effect; for the more strong is the impulse communicated to the nervous fluid by the soul, and the more extreme the tension of the fibres, so much the more is their elasticity weakened, the equilibrium between these two powers of the circulation destroyed, and the circulation itself obstructed. At this time the nervous fluid produces, especially in the plexus nervosi, a very great constriction,

* See the conclusion of the 1st Section, Book IV.

proper

proper to continue the emotions of the soul.

The duration of this impression is at first, therefore, in a direct ratio of the degree of sensibility, afterwards in an inverse; for the more elastic the fibres are, so much the more they yield to the action of the nervous fluid, the more forcible likewise is their re-action, and the equilibrium much sooner re-established. In estimating these relations, we find the duration of this impression to gain less by an excess of sensibility in the organs, than it is prejudiced by an excess of organic elasticity.

In a body delicate and vigorous, the soul must therefore be subject to passions the most violent and the least durable; in a body indelicate and robust, to those which are the most constant.

Hence the reason why men of great sensibility are easily provoked to anger, whilst the indelicate and robust are with difficulty inflamed. Hence the reason why the anger of the former is like a fire of stubble, which blazes and is soon extinguished; while that of the others is of
long

long continuance: once excited to fury, their souls cannot be appeased, resentment remains after revenge is gone, like the agitated ocean, which subsides not to a calm till a considerable space after the storm. But the duration of the passions is produced by many other causes. Whilst Man is intent upon the object of his passion, as he is ever surrounded with beings adapted to distract him, he easily loses sight of it: this very frequently happens. During these moments of distraction, if the sensation which occasioned it be not very interesting, the passion must be regarded as a latent fire, which instantly blazes forth on the least admission of air.

If the soul be strongly affected by these new objects, the passion revives not, but yields to some other sentiment. Thus the more sensible a man is, the more he is exposed to the impression of external objects, and the more easily will his passions be extinguished.

This is the cause why the virtue of the sprightly is neither regular nor constant;
it

it appears only at intervals, by starts, as if it had no source in the persons themselves, they being obliged to be frequently recalled to the practice of it: while the virtue of the sedate and robust has the appearance of constant habit.

On the other hand, while the passion is extremely violent, and any sentiment tyrannizes in the soul, other objects have not power to disengage the attention.

The passions therefore, if they are, on one side, less constant in proportion as Man is more sensible; they are, on the other, more constant in proportion as he possesses greater sensibility.

This is observed more especially in the passions which have a sentiment of love for their basis: when the soul believes that its own happiness depends on the possession of some object, nothing can disengage it from thence; the powerful attractives of pleasure keep it intent on the beloved object, and admits of no interruption.

From these observations let us conclude, that,

A Man

A Man of extreme sensibility, who has only slight affections, must be the most fickle of human kind; he is never so constant, as when violently excited by some passion.

The force of the passions therefore depends on the sensibility of the fibres; their violence on their extreme sensibility, and their impetuosity on their sensibility combined with their force: the duration of the passions depends equally on the sensibility and elasticity of the fibres, and on their force and solidity. It is thus the physical part in Man gives character to our sentiments and passions.

How Organization renders MAN open-hearted, or a Dissembler.

To the preceding truths, I add another which arises immediately from them.

The same organic elasticity, which causes the extreme force of the passions, renders Man frank and open-hearted; for the soul cannot conceal its emotions, they rush out precipitately, and appear in his gesture, speech and voice; finally, the repressing of these emotions is ever painful,
and

and even impossible, when the soul is strongly affected. Reserve is peculiar to souls united to organs of lax or very gross fibres; frankness, to souls united to organs of extreme organic elasticity.

Men of great sensibility and liveliness, always speak the language which springs from the heart, the language of truth; thus it is by warming the heart of him who is naturally cold, that is, by augmenting his sensibility, by increasing the elasticity of his fibres, that wine banishes reserve and lays open the heart.

Thus no credit is to be given to persons of known dissimulation and habitual reserve, unless in the paroxysms of passion. Then only are their words without disguise; in these moments, the violence of the emotions of the soul augments the tension of the fibres, affects them with a slight rigidity, frees them from the empire of the will*, makes them drop the mask and appear without disguise.

When you press the chaste mistress of your heart to lay open her mind to you,

* See observations 62, Book III.

although

although she submits with regret to the lessons of her mother, and to the severe laws of modesty, she nevertheless divulges not her true sentiments; she allows she has a friendship for you, and nothing more. But when wearied out with a long and painful resistance, the dissembling fair permits her lover to triumph; while love fires her veins; while she embraces her beloved with transports; clasps him in her arms; presses him to her eager bosom, and her humid lips attract and distil pleasure; her voice is broken and faltering, scarcely can she articulate a few words—expressions of tenderness and love.

Observations on the Manner in which Organization renders MAN obdurate and cruel, compassionate and humane.

Let us again examine the effects of the primitive and organic elasticity of the fibres; for what a diversity in the moral character is produced by the different degrees of these corporeal faculties! What surprising phenomena, of which they are the cause! Principles the most fertile!

Princi-

SOUL and BODY accounted for. 143

Principles! whose extent, when fully known, demonstrate them to be almost inexhaustible.

We do not compassionate the miserable, but from an idea of his sufferings; we have no idea of pain till we have experienced it ourselves: if, therefore, to bemoan others, we must have suffered ourselves, sensibility is a disposition absolutely necessary to pity.

If united to gross organs, or to fibres too solid or too lax, the soul becomes obdurate and inflexible; when united to organs delicate, elastic and vigorous, it becomes compassionate and tender. Hence pity, although an artificial sentiment, is nevertheless, in every individual, modified by the organization.

The greater the sensibility of Man, he may thence be the more humane; and by a very singular consequence, he may thence be the more cruel. For if, to bemoan others, we must be sensible ourselves, it is equally true, that we discover only that sensibility for others which we want not ourselves. The more sensible any one is, the more assiduous is he to avoid pain, the
more

more eager, after pleasure, the more engrossed by himself, and the less concerned for others. If, in these cases, sensibility be fixed on the sensual or artificial passions, which have neither generosity, clemency, nor goodness, for their object; the voice of pleasure drowns that of pity; the heart is contracted and shrunk within itself, the soul, full of the object of its desires, denies its attention to every thing besides, and is no long either clement or humane. If the well-being of others be inconsistent with our own, these affections become more extreme; for if it be a consequence of the love of ourselves, to love those things which are beneficial, so likewise it must be, to hate those which are prejudicial to us. Thus they, whom we now look upon with indifference, become the object of our most extreme hatred, when we regard them as enemies; in the heat of passion we treat them with the greatest virulence, relentlessly seek their ruin, aggravate their misery, and view their sufferings with an eye of satisfaction.

The more sensible likewise Man is,
the more fearful he is of pain, and the
more

more timid; the fear of his enemy prompts him to complete his destruction, whenever opportunity offers. Let us therefore conclude, that the more sensible a Man is, the more he is obnoxious to hatred, his cruelty is greater, and the more atrocious his character.

Another reason, which modifies pity in our hearts, is drawn from that disposition of the body which characterises the temper of the mind.

I have shewn that the melancholy humour, by centering Man's thoughts in himself, renders him unsociable, obdurate and cruel.

That, which constitutes good humour, is much more favourable to pity; yet in some particular instances less so. In the gay, the sentiment of pleasure, ever predominant in the soul, nourishes therein ideas of joy, and the sight of the unhappy generates those of sadness. These therefore are weakened by the former, and consequently make not their full impression.

The disposition of the body, which constitutes serenity of temper, is much

more favourable; as it leaves Man the entire liberty of his mental faculties, and changes not the impression of objects.

But of all dispositions of the body, that is the most favourable which constitutes the tender character, that disposition of the soul which determines it to compassion.

The Man who is constitutionally sad may be just and sincere; the gay may be equitable and meek; and a Man of a serene temper may possess the virtues of both. But it is only to the Man of a delicate constitution of body, that Nature has given a compassionate heart; on him only has she bestowed that noble propensity to clemency, that generosity of soul, which takes pleasure in mingling tears with the afflicted, in melting at another's woe, and relieving the oppressed.

Let us add, that it is the same disposition of body which generates in our hearts, that goodness which prevents the requests of others, and that easy communicability of heart, which, in a moment, contracts the most durable friendships, produces that sensibility and tendency of mind, whose

SOUL and BODY accounted for. 147
whose first emotions determine our lot, and
decide the destiny of our lives.

Organization characterises the Manners.

I constantly return to the sensibility of
our organs; so fertile is this principle, so
many and so marvellous are its pheno-
mena!

The love of happiness is the great and
only principle of all our actions, but sen-
sibility is the source, or rather the stan-
dard, of our vices and of our virtues.

Men of the greatest sensibility may be
the most cruel, the most vicious; but to
them likewise has Nature given souls of
the greatest virtue, of the noblest senti-
ments, grandeur and magnanimity.

Men of a little sensibility are beings
without virtue, lifeless carcases wherein
you can discover neither fire nor activity.

*Farther Observations on the Manner in which
Organization renders MAN frank and
basty, or timid and deceitful.*

The sensations, which the soul receives from the general organ of feeling, are not confined to agreeable and painful impressions, the soul likewise perceives the vigour or languor of the body; and this sense of vigour and languor greatly diversifies the moral character of Man.

The sense of vigour *, combined with sensibility, renders Man ardent in his desires, precipitate in his designs, and impetuous in his actions; whilst that of languor renders him weak in his desires, slow in his resolutions, and indolent in his conduct.

* The causes, which constitute the sensibility of our organs, are the same with those which constitute vigour of body; but besides these common causes, sensibility has others which are peculiar to it, as I shall hereafter demonstrate in treating of the influence of climates on the moral character: it is this which obliges me here to distinguish these two faculties.

Those

Those who are vigorous and of great sensibility are therefore furious, vindictive, audacious and inconsiderate.

Those who are weak and of little sensibility are timid, crafty, indolent and patient.

Organization determines the Force of the
SOUL.

It has been already observed, that a delicate body contains not a mind endued with force.

In treating of the force of the soul, I have destroyed the sophistry which has been used in the application of this term. I have proved, that, properly speaking, there are no minds endowed with force, since every Man is irresistibly subject to sensibility, and held in subjection by the passions. I have shewn, likewise, that in every individual, the force of the passions is ever in proportion to sensibility, and that the sensibility of the soul is ever determined by that of the body. Finally, I have demonstrated, that the force of the soul, if we chuse to make use of

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that expression, is in an inverse ratio of the
sentient faculty.

*The soul therefore is more in subjection in
a body of delicate and great sensibility, than
in a body which is indelicate and robust.*

C H A P. II.

*Influence of ORGANIZATION on the
Mind.*

WHAT an astonishing variety of
minds! How different their cha-
racters!

All men compare and combine their
sensations to a certain degree; but every
one is not equally capable of comparing
and generalizing them, and of forming
therefrom ideas and new combinations.
All have not the gift of invention, nay,
not even that of perfecting what is already
invented. How few are able to think
of themselves! How many others, yet
more confined, who cannot think at all,
but are ever chained down to imitation.

never

never doing any thing but what they have seen done before, nor saying any thing but what they have heard said, as if endowed with instinct only, and entirely destitute of judgment!

In distinguishing the operations of the mind relatively to their objects, we find, that the greatest part of mankind are confined to the combination of sensations, and that but very few can attain to that of ideas; but amongst the small number of those who think, what diversity appears!

There are some whose activity of soul is such, that they can never seize any principle, without tracing it to its most distant consequences. There are others, and of these the number is very great, whose less active souls let every consequence escape them, which has not a certain degree of evidence at first sight, and seize those only which present themselves.

How different likewise their character! In one, judgment is the chief power of the mind; in another, imagination; this is fertile in ideas; that other has solidity of judgment; this is more impetuous, superior in argument; that reasons more

closely, and is more concise; this excites admiration by his lively sallies, that by the force and solidity of his eloquent silences, guides and governs us.

The cause of this diversity of minds has been ineffectually sought; but if any one sufficiently attends, he will discover this, as well as the character of the heart, to proceed from the disposition of the corporeal organs.

The impetuous *Eschylus*, the agreeable *Horace*, the sublime *Milton*, the judicious *Bacon*, the profound *Newton*, the sagacious *Montesquieu*, in a word, every man owes the turn and character of his mind to the constitution of his body.

But not to rest content with merely asserting this truth, I proceed to demonstrate it, to determine the dispositions of our organs, which occasion the diversity of mind, and develop the unknown laws of their mysterious influence. In order to account for these phenomena, I shall not follow the tract of those who have attempted it before me, nor will I have recourse to forced explanations, which are neither convincing nor satisfactory: while
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the natural proofs arise spontaneously and lead us, as it were, by the hand, to the scope of our pursuit. Here shall be no enquiry concerning the complicated and wonderful structure of the brain, nor the obscure and chimerical modifications of fibres and fibrillæ, which are exceedingly magnified by some authors. These phenomena are produced by the most admirable laws; by causes so simple, and so evident, that it is really astonishing no one should have discovered them till now.

Organization determines the Capacity of the
MIND.

There are some men, whose active souls receive few sensations without comparing them; these are the most ingenious.

There are others who compare only a certain kind of sensations; these are less ingenious than the former, and so much the less so, as their souls have a less propensity to compare their sensations, and to form ideas therefrom. The souls of others again are so little active, and so greatly averse to thinking, that they neither com-
pare

pare nor combine any thing at first sight; they require sensations which are both strong, and many times repeated, before they are brought to compare them, and to form any idea: such, being more or less stupid, differ not from the weak minds, but in the small number of their ideas, which they so laboriously produce.

No man desires to know, but because he desires to be happy: he who is without desires, and without fears, will certainly not give himself the trouble of comparing his sensations, of combining his ideas, and reasoning therefrom.

Passion therefore is the cause of this activity of soul, this perpetual fermentation of reason*; without it, the mind, unaffected, unsupported, falls into a languor, and is immersed in sloth.

* The curiosity of children, and those decisive propensities, which many suppose natural, and which some philosophers pretend to deduce from instinct, have no other source. This curiosity arises from their having been taught to look upon science as happiness, and consequently that it was greatly their interest to acquire knowledge. These propensities arise from the pleasure men find in particular employments.

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The mind therefore *thinks* only when it has an *interest* in *thinking*: this interest may be of many kinds; one finds it in the pleasure which he receives from the knowledge of things; another in the pleasure he takes in displaying his learning, and attracting regard; a third in the means of procuring the conveniences of life by his knowledge. But whatever the object may be, the passions ever actuate the mind; by their activity its faculties unfold and rise to perfection. To arrive at excellence of any kind, Man must be animated by some passion; and the more violent his eagerness to succeed, the more efficacious are his efforts for that purpose. For only the violent passions produce illustrious, heroic and great men: he who is animated by no passion, does nothing to render himself illustrious, and is wholly insignificant. *Men therefore are more or less ingenious, as they possess greater or less sensibility.*

The human understanding is undoubtedly greatly indebted to the passions; but if the passions are necessary to render the mind active, they are not sufficient to produce

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duce a creative imagination, or a great genius: they can indeed render Man eager after success; but they supply not the qualities, which are necessary to the acquisition of it. Some physical dispositions therefore are required, together with the sensibility of our organs.

Let us inquire into the nature of these dispositions.

At our birth none of the mental faculties is unfolded, none in exercise *, not even instinct. But whether the soul existed before its union with the body, or whether it had any peculiar method of acquiring knowledge or not, it is most certain, that when once it has become subject to the laws of this union, it no longer retains aught of its former state, not even the remembrance of it.

Every man possesses the power of judging; but even although we suppose that every man possessed it alike, the minds of individuals would not be less different; for the understanding can never proceed

* See Book II. Art. Of the unfolding of our mental faculties.

alone ;

alone ; but requires the concurrence of the sensitive faculty, or rather that of the sensations.

Examine the productions of the human mind, the most singular works of imagination, even those which have the least analogy to nature ; all have for their subject, sensible objects, or relations of these objects. Almost all our thoughts are corporeal images, and of the most abstract ideas there is none which is not fixed by the senses ; there is not throughout all nature a work of the pure intellect. If we desired, for instance, to form any idea of the Deity, or his attributes, we should consider him under human relations ; at one time, as a beneficent father ; at another, as a glorious King ; now, as a benevolent master ; then, as an offended Judge.

He who would rise to the first of Beings, and contemplate him in his essence without the aid of corporeal images, perceiving no relation between God and himself, knows not how to form any notion of him, and is lost in the sublimity of the idea. Thus all religions are supported by
a gross

a gross worship, which interposes material objects between the supreme Being and Man. One contemplates the Deity in his works, another worships him under an imaginary resemblance ; for the heart, as well as the mind, is ever fixed by the intervention of the senses.

Thus likewise, when we form to ourselves a notion of the soul, we ever represent it as a thin shade, or subtil matter ; in short, as a corporeal being, if we form any image of it at all.

Whatsoever object we chuse, the case is the same ; for let us employ our utmost efforts to form ideas wholly intellectual, or to conceive pure spirituality, the only consequence of the attempt is to involve the mind in greater darkness and confusion.

Every idea therefore is formed from the true or false relations of sensible objects ; whence the understanding never operates without the concurrence of the sensations : in proportion as they are removed from their objects, the ideas we would convey become unintelligible ; without their assistance our ideas either escape us, or they are never formed at all.

Let

Let us conclude from the preceding, that the sensations are the basis of all our knowledge.

What a variety of minds therefore must be produced by the different structure of the organs of the senses, the only means whereby we can have communication with the various beings which surround us.

Our knowledge is neither increased nor perfected but by the comparing our sensations. The greater the number of sensations to be compared, so much the more numerous are our ideas; the more distinct these sensations, so much the more clear are our conceptions, and the more exact these comparisons, the more perfect our knowledge must be. On the contrary, the smaller the number of our sensations, the more confined is the sphere of mental activity, and the less numerous our ideas; not only from the privation of those ideas which are founded on the sensations of the sense we are without: but from the privation of many others; for it is evident that, as all the parts of nature are connected, the sensations of one sense often serve to discover the relations of the sensations of another sense.

The

The number of our ideas must therefore be relative to the number and structure of these organs: whence *Man must be less intelligent, less ingenious, in proportion as he possesses a smaller number of senses, and as his senses are less exquisite.*

Although there is an intimate relation between the number of sensations and that of ideas, this relation is not equal with regard to every sense; one sense may be confined whilst another is less so.

From a calculation of the number of the objects of the senses, the organ of smelling appears to be the most confined, and that of seeing the least so. The eye is of all the bodily organs the most comprehensive, and takes in the greatest number of objects; forms, dimensions, colours, are all within its district; the varieties it perceives in each of these modifications of matter infinitely surpass all those within the cognizance of the taste, smelling, hearing, and feeling; that is, of sounds *, favours, odours, and sensations

* I consider not the ear as the organ of sounds, the conventional signs of our thoughts, and I look upon the eye

tions from the touch. This is evident during sleep; for the many sensations which are retraced in the mind during rest, are so many images of visible objects. The sight therefore contributes more to knowledge than any of our other senses.

With regard to the nature of our sensations, it is very evident, that, from the different structure of the senses in different individuals, there must be a great diversity in their respective impressions.

Every object must naturally produce on Man, an agreeable or painful impression; for every Man is a sensible being, and every sensible being must be susceptible of either pleasure or pain; but it does not therefore follow, that the same object should produce, in every individual, the same sensation; their respective senses not

eye in the same light. For if Man, deaf from his birth, receives no advantage from conversation, so the Man that is blind receives none from reading: and if it be possible to supply the defect of hearing, by the sight, so it is likewise that of seeing, by the ear: every thing is therefore in this respect equal, the difference between the number of their sensations continuing the same.

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being of similar organization. In what-
ever manner material objects affect the
senses, it is certain, that the same objects
affect them not equally in every individu-
al, and consequently produce not in the
soul the same impressions. The lilly is
not beautiful to every eye, neither is
the anana pleasant to every palate, nor
the song of the nightingale to every ear.
I shall not speak here of these diversities
in the sensations of individuals, as their
cause is utterly unknown; but shall attend
to those which are more evident and better
understood.

The chief differences between the sen-
sations of different individuals consist in
their delicacy, in the greatness of their
image, and in the number of the objects
composing the picture; the two last spe-
cies of these differences are peculiar to the
organ of sight, the other is common to all
the senses.

The more delicate an organ is, the bet-
ter it perceives those minute objects which
escape organs which are less so. The de-
licacy of the senses is often necessary to
the acquisition of many sorts of know-
ledge;

ledge, we are indebted for the discovery of the Satellites of Jupiter, and other celestial bodies, of the animalcula in liquors, and of the minutiae of anatomy, to those instruments which have been contrived to supply the imperfection of our senses. These supplements have advanced our knowledge in many respects beyond the point to which it had arrived a few ages ago, and have, in our times, conduced to the discovery of many great and important truths. But as a delicate organ is more susceptible of irritation, and less distinctly receives strong sensations than another that is less so, it loses on one side what it gains on another, and sometimes more. To what use would the faculty of seeing in the dark serve, if the light of day be painful to the sight; it is very evident, that a person so circumstanced would lose by the exchange. With an eye, likewise, which comprehends only a small prospect, we can discover particular beauties more distinctly, than with an eye which takes in an extensive circuit; but we see not so well the harmony of the

whole *. A too comprehensive organ sees detached parts imperfectly : an organ not sufficiently so discerns not their relations.

By entering into an examination of the sensations which are employed in the several sciences, we might determine what particular structure of the senses is best adapted for each ; but, in general, organs moderately delicate, adapted to comprehend a moderate number of objects, and possessed of every faculty (if I may be allowed the expression) in a mean proportional degree, are the most advantageously constructed. In cases where penetration depends on the number and distinctness of the sensations, and on the comparing the sensations together, he whose senses are best constructed, must therefore have the greatest natural qualifications.

“ But we perceive not, says a celebrated philosopher †, that persons whose
“ senses are dull, sight imperfect, hear-

* It is because attention is weakened by being applied to many objects.

† Buffon's Natural History, Vol. 4. 12mo edit.

“ ing

“ ing thick, and smelling greatly if not
 “ wholly decayed, have slower capacities
 “ than others.”

The observation is just, if understood of civilized nations ; for how is it possible to perceive the advantage of a superior organization of the senses in society, where Man can easily find means to supply the imperfection of his senses ? What defect is there of the organs, for which art affords not some remedy ? The short-sighted are furnished with telescopes which bring near the most distant objects ; the weak-sighted are supplied with microscopes, angiscopes, and other glasses, which make them distinguish minute objects which would otherwise escape them. To persons of dull hearing, are given acoustic instruments ; for those in whom the sense of smelling is decayed, or taste imperfect, are prepared concentrated odours, flavours, juices and quintessences. Supplied with these substitutes, is it strange that men, whose senses are imperfect, should become, in this respect, equal to those who have received from nature the most perfect organs ? Take your observations from persons def-

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titude of these resources of art, and then
determine.

“ Nevertheless, he replies, Man is not
“ the more ingenious for having exercised
“ his ears and eyes.”

I shall prove hereafter (in opposition to
the vulgar opinion) that our senses are not
rendered more perfect by use: but sup-
posing it to be true, what would our phi-
losopher infer from his vague assertion
against the advantage of well organized
senses? Without doubt Man may have
exercised his eyes and ears, yet not be
more ingenious than another who has not;
he may even possibly be less so: for the
mere exercise of our senses can never in-
crease our knowledge; they must have
been also exercised on subjects which are
not only important, but relative to some
science.

Were a man to spend his whole life in
examining grains of sand, he would not
be less ignorant, although he might know
their different configuration, than when he
first began; but if, instead of this unpro-
fitable and barren occupation, he had pas-
sed the same length of time in examining
plants,

plants, animalcula, and in forming such observations upon natural history, as have rendered *Malpighi*, *Lewenboeck* and *Muschenbroek* so famous; do you suppose he would have profited nothing by this exercise? Do you imagine, that his knowledge would neither have been increased, nor his understanding improved? The least reflection would have discovered the futility of these objections. However, it was necessary to employ some time in the refutation of them; as the celebrity of the objector may be of great weight to the generality of readers. Let us conclude, *that the better constituted the senses are, the more ingenious Man is, cæteris paribus.*

Organization characterises the MIND.

Men not only differ one from another in the number of their ideas, but likewise in the nature of their knowledge. The difference of minds therefore depends not wholly on the multitude of its judgments, but on the manner in which they are formed.

Does a man judge without much reflection, does he form his ideas upon relations which are apparent only? He is then *superficial*. Does he form his ideas upon true relations? He is a Man of *sound understanding*. Does he mis-improve these relations? He is in this case of an *erroneous understanding*. Does he forge chimerical relations, which have neither reality nor probability? He is a *fool*. Does he too negligently compare his sensations? He is *weak*. Does he exercise his judgment only upon refined ideas? He is a *wit* *. Does he exercise it on ideas difficult to be acquired? He is *profound*.

He, who has received from Nature the most exquisite, has no advantage over him who has received an inferior organization, unless he cultivate his mind. But if animated with the same passion, they both

* Wit, is a habit of discerning those relations which are not obvious to every Man: good sense, a habit of discerning those which are true but obvious to all: genius, which appears to possess the middle station between reason and imagination, is a habit of discerning relations which are latent and difficult to be discovered.

apply

SOUL and BODY accounted for. 169

apply themselves to study, their efforts will be attended with very different success. Whilst the former, without difficulty, surmounts the greatest obstacles, advances with a rapid flight in his progress towards truth, and easily penetrates the secrets of Nature; the attempts of the latter will be vain, he meets obstructions every moment, and proceeds with tardy steps in the vast career of science.

I have already assigned some physical causes of the difference of minds; but many others far more important remain yet to be discovered.

Organization, assitant or an Hindrance to the unfolding of the MENTAL FACULTIES.

It is unknown whether the soul, when disunited from the body, can perceive, think, or remember its sensations and ideas or not; but it is certain, that, when once it is united to the body, the unfolding of its faculties depends entirely on the state of the body with which it is yoked. Let us endeavour to discover the latent reasons of this important truth.

With-

Without sensations there can be no ideas, as has been already demonstrated; but if all our ideas are founded on the sensations, they likewise depend on the understanding by which they are formed. The mind cannot form them in the same manner in every individual, nor can it form them always in the same manner in the same person.

When the impressions of objects are made on the organ, and the sensations are received by the soul, all the functions of the senses are discharged, but not all the functions of the body.

To judge of the relations of objects, we must distinguish these objects with care, examine and compare them under their different appearances: this requires attention.

Attention is the parent of all knowledge: attention, by applying the mind to the consideration of beings, discovers to us their different properties: attention, by fixing it upon the different phenomena of Nature, investigates its unknown laws and its secret relations, which otherwise escape us: attention produces, from the
various

various combinations of our observations, those sublime discoveries, those admirable inventions, those prodigies of science, those productions of genius, which have been in so many various ways beneficial to mankind. Without attention every phenomenon in nature is lost to us; in vain is the soul endued with such noble faculties, in vain does the universe offer its vast and wonderful volume to our sight.

Attention is strengthened by being concentrated; it then suspends all the other faculties of the mind, and seems to have intire possession of the soul. On the contrary, it is weakened by being divided: when it has got half way in a geometrical demonstration, if any singular object affect our organs, the mind is instantly distracted, suffers itself to be engrossed by this object, and after it has wandered a while, endeavours in vain to resume the thread of its former thoughts. Thus every sensation foreign to the object present in the mind, diverts and destroys the attention.

To examine objects, to reflect, to meditate, the mind must be perfectly calm;

no

no sensation, no foreign sentiment, must then affect the soul. *The first thing therefore necessary to the free exercise of thought, and to the unfolding of the intellectual faculties, is that the soul be united to a body, whose vital functions * are performed with ease, moderation, and regularity; that is, that the powers which cause circulation have a degree of organic elasticity, proportionate to the volume and consistence of the fluids.*

But it is not enough that the soul be united to a body in perfect health, and exempt from disease; for, that the body may not distract the soul from the objects on which it is intent, the sensation which results from the action of our organs must be imperceptible. Thus *the disposition most favourable to the reflection, is that state of the machine which constitutes serenity of temper: that, which causes gaiety, allures the mind towards outward objects †; that, which causes sadness, attracts it within: the one prevents it from examining ob-*

* See Book IV. Art. How organization renders Man fickle, thoughtful, volatile or taciturn.

† See Book IV. the same Art.

jects,

jects, the other from combining their impressions; both distract it, and interrupt the series of its thoughts. Besides, with that disposition which constitutes serenity, we can contemplate Nature with the greatest advantage, and discern what she really is.

It is only in retirement, and when the passions are at rest, that the soul can resign itself to profound meditation: it is only in those tranquil moments, when the soul retires within itself and is wrapt in silence, that we can meditate to advantage.

They who have great sensibility, enjoy least of this liberty of mind; being continually exposed to be acted on by objects, and being strongly affected by their slightest impressions, they are almost always engaged by externals. This extreme sensibility, I allow, may be in some measure remedied by shunning every kind of noise, avoiding the light of day, and retiring to silence and solitude of the country, or by taking advantage of the stillness of the night. But these precautions are practicable in certain cases only; yet, though every

ry precaution should be used, the sensible will still be more obnoxious to distraction: for the delicate and sensible are subject to more wants, more indispositions, and consequently to more frequent distractions, than those who are robust and of strong constitutions. Thus almost incessantly influenced by their various wants, and as constantly engaged in the gratification of them, as if unavoidably attached to present objects, they easily lose the remembrance of the past, together with the power of considering and meditating on those objects which present themselves to the mind, or rather they never possess it. For during the perpetual flux of tumultuous sensations which incessantly attract the attention outwardly, they can neither examine nor meditate upon any subject whatever.

It is therefore extremely difficult, if not impossible, for a soul united to very delicate organs, to employ itself in profound meditation, and to enjoy that liberty which is so necessary to the study of Nature.

Reflection is a state of the mind which requires a sufficient degree of sensibility to be strongly affected, but not enough to make
make

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make it be irresistibly attracted by present objects. *Only the Man whose soul is united to organs of moderate sensibility, can meditate at liberty and study with success.*

Organization renders the Understanding either just, extensive, delicate, profound; or superficial, confined, erroneous and gross.

Our intellectual faculties are neither developed nor improved, but in proportion as the mind compares its sensations. The more it compares them, the more it discovers their relations, and the more numerous are our ideas; the more carefully it examines them, so much the more perfect is our knowledge.

I have distinguished two powers of the understanding, that of perceiving and considering objects, and that of pronouncing on their relations. The first is the basis of the second, and necessarily precedes it. What then is requisite to enable the mind to form a sound judgment of things? An accurate perception of them. It is therefore on the greater or less degree of attention we employ in examining objects,

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objects, or rather on the different apti-
tude of the mind for attention, combined
with the time it is able to support it, that
the justness of our judgments and the
character of our ideas depend.

To acquire profound ideas, we must
for a long time, and without distraction,
contemplate the same objects, consider
their relations, their difference, examine,
compare and combine them in many dif-
ferent shapes, that we may afterwards
consider them under unobserved appear-
ances, and discover their hidden relations.

I will not however say, that every great
discovery has been made by gradual series
of combinations and complicated observa-
tions. Sometimes the mind overlooks the
intermediate space, and perceives its ob-
ject at a distance amidst surrounding
darkness: but if in this manner it arrive
at truth, it must nevertheless return to
observation, to experience, and to this
gradual series of combinations, to verify
these new ideas, and connect them to o-
thers which have been already acquired.
Thus having at once traversed an immense
space, it is afterwards obliged to pass over
every

every intermediate degree which separates the two extremes, returning circularly to the point from whence it at first set out. Such is the progress of the human mind in discoveries of every sort.

Thus a person desirous to acquire new knowledge, or verify that which he has already acquired, can never accomplish his design, but by a long and close examination of the phenomena of nature.

It is therefore only to attention more or less strong, more or less continued *, that we owe the superficiality or profundity of ideas.

* This attention is not the same with that which is required in studying the languages; in this latter, every thing is unconnected; in the former, every thing is connected: in the one, the mind relieves itself by employing attention but at intervals, when prompted by the will, and by passing from one object to another; but in the other, the same subject requires continued attention, the soul cannot examine and repose itself alternately. He who desires to divide his time between the examination of objects and repose, is ever at a stand in his observations, is constantly distracted in his thoughts, is perpetually obliged to recommence the same labour, and never profits by his pains.

This different aptitude of the mind for attention, and the space of time it is able to support it, absolutely depend on organization : for the mind becomes fatigued just as the body does, and both at the same time.

It is unknown whether the soul is really fatigued ; for our knowledge of things is not sufficient to demonstrate whether an immaterial substance is, or is not, naturally susceptible of lassitude ; but without the least doubt, the soul, when once it is united to the body, and during the whole continuance of its union therewith, experiences a sense of fatigue as frequently as the body.

Might I have leave to offer my opinion upon so delicate a subject as this is, I would declare for the negative, and would support it thus.

Since the sense of lassitude is common to both soul and body when united, it is evident, that the soul must become fatigued together with the body.

The lassitude of the mind is partly the lassitude of the body itself *, which is

com-

* Lassitude of body is only an unpleasing sensation, which arises from the too frequent and too continued tension

communicated to it by the general organ of feeling, and probably it is no more than this; for since the mind, to be intent, requires the fibres to be tense, and as the fibres are ever fatigued by their tension, it is not to be wondered at that the soul should cease to be intent, when the fibres cease to be tense, or, which is the same, the mind ever appears fatigued when the body is tired, and the body is tired at all times when the mind is fatigued. Besides, we have no idea of the lassitude of the soul, but by the weakness of its thoughts and emotions, and by their short continuance on the same subject. When the body is tired, that is, when the organs are affected with languor, the functions of the soul must needs be languid, the ideas scarcely distinct, and the vivacity of the sentiments decayed *. This has been already explained.

tension of the fibres, by which the nervous fluid which distends them is exhausted, their organic elasticity decreased, a languor seizes the senses, and the whole body is affected with stupor.

* See Book IV. Art. the character of the soul ever congruous to the state of the body.

It is therefore evident to me, that the lassitude of the soul is only lassitude of the body *, and that in this phenomenon, as in many others, the reality is concealed by the appearance.

But whether it be so or not, this is certain, that the mind is fatigued together with the body. This is an observation which universally prevails, yet no one has hitherto thought proper to deduce the natural consequences from it.

When the body is fatigued, admitting that the soul really fatigues the body by application, let us be ever so desirous to continue our meditation, and make what-

* If our fatigue be somewhat diminished by a change of objects, it is not because the soul then acts upon others fibres, as a modern writer has supposed, but that the soul, roused by this new object, experiences a fresh pleasure, which partly conceals the prior sense of fatigue, and likewise, because this new object often requires a less degree of attention, which diminution administers some sort of relaxation and repose. But if this new object require greater attention, so far from relieving the fatigue of the soul, it very sensibly augments it. This we experience when we change the study of history, for that of geometry, or the superficial perusal of a romance, for some deep problem in mathematics.

ever efforts we please, we cannot long keep the mind fixed on the same object, nor fix it there for any time strongly. *The soul therefore cannot continue its attention, when the fibres have lost their tension.*

It is therefore erroneous to suppose, as many philosophers have done, that our aptitude for attention solely depends on the power of the passions. It is true, that the greater interest we take in applying ourselves to any particular study, the longer we can support attention; passion can then employ the whole strength of the body, but nothing more: hence let the passion be ever so violent, *attention is always proportionate to the elasticity and force of the fibres.*

Besides, forced attention is more prejudicial than favourable to our study. In the first place, it cannot be very strong, from the painful sensation which ever accompanies it: its duration likewise is very short; for when the organs are once wearied, they act but with little force; besides, the body is exhausted by those violent efforts, and Man loses by its disordered state all the time which he endeavours to

gain by this prolongation of attention, and sometimes even more.

Such are the physical causes of many diversities of mind; causes which have hitherto been unnoticed by philosophers, although they so naturally arise on examining the phenomena I have now undertaken to explain. And here let us repeat our first principle, in order to a combination of its effects, and that we may deduce its proper consequences.

Attention is ever proportionate to the organic elasticity and force of the fibres. To produce profound ideas, the mind therefore must be united to organs composed of fibres which are both strong and elastic; the mind, it united to in-elastic and weak organs, is trifling and supercifial in its operations. Thus a Man, whose constitution is delicate and sensible, is not capable of profound disquisitions: too weak to sustain long meditation, and too sensible to lead a contemplative life, he beholds Nature without attending to particular parts, incessantly flies from object to object, glances upon them, and dips not beneath the surface.

How-

However, I do not pretend to say, that every man of strong and vigorous constitution is thus profound; for, besides this physical disposition, his talents must be cultivated; all I would be understood to say is, that only a man of such a constitution of bodily organs can arrive at this state; others may, indeed, have a great number of just and solid ideas, but never those which are profound and well connected. That sublime knowledge, which is derived from the constant study of Nature, is what they are unable to acquire of themselves; on the contrary, they must be initiated in it by others; their minds may be congenial with the minds of Pope and Voltaire, but will never rise to the dignity of Newton's or de Montesquieu's; they may be called men of wit and learning, but never men of depth.

To be just, our ideas must be distinct; but these qualities are not always united. To conceive distinctly, it is sufficient that our sensations be well expressed, and that the mind be exact in pronouncing on their apparent relations; but to conceive justly, there is required a perfect knowledge of

every relation necessary to form a solid judgment. Thus ideas may be distinct, yet not be just.

We may therefore from this cause, reason justly upon one article and falsely upon another; but in every case, where to discover the true relations of beings, it is requisite that we attentively examine them; in every case where the knowledge of things is the result of a great number of complicated combinations; in every case where truth is difficultly obtained, and where there is a necessity of seeing much, if we desire to see well, the justness of our judgments depends on the capacity of the mind, and on its profoundness, or rather, justness and profoundness require the same degree of attention of the soul, and the same organic disposition of the body. With feeble and delicate organs, therefore, Man is incapable of this justness of judgment: too weak to consider objects under their various appearances successively, and too feeble to pursue the connexion of things, and to collect a multiplicity of ideas in the same point; he suffers many things to escape, from an inability to retain them, and

and examines hastily those which remain: thus passing slightly over many objects, and judging of the whole by his imperfect knowledge of a part, he forms deductions necessarily false and inconclusive.

Ideas are particular or general relatively to their object. The same disposition of organs which is necessary to the acquisition of profound ideas, is likewise necessary to the acquisition of those which are universal: for the universality of ideas results from the multitude of relations, which the understanding perceives, unites and collects into one and the same point of view. The faculty of comprehending the system of Nature is therefore given only to those, whose fibres are endued with force and great organic elasticity.

Another effect of this organization of the body, which we could never have suspected and scarcely believe, although it is demonstrated, is, that it is absolutely necessary to delicacy of sensations and ideas.

It is an opinion universally received by philosophers, that the senses are perfected by use, and that they are improved by seeing, feeling, tasting, &c. just as the mind is improved by reasoning.

“ A painter

“ A painter, says one, sees, at first sight,
 “ the defects of a drawing, and the dif-
 “ ferent tints in a picture, although invis-
 “ ble to other eyes.”

“ A shepherd, accustomed to number
 “ his flock, knows them from those of
 “ another, by marks which none but
 “ himself can discover.”

“ A man of a nice palate in liquors,
 “ distinguishes in the flavours of wines dif-
 “ ferences which are unnoticed by others.”

“ The ear of the musician who leads
 “ the orchestra is sensible of the least
 “ dissonance.

“ And the words of a foreign language
 “ appear to one unaccustomed thereto,
 “ but a confusion of articulate sounds,
 “ which become afterwards distinct, by
 “ hearing them frequently repeated ?”

If we maturely consider these pheno-
 mena, we shall find this pretended im-
 provement of the senses *, which is at-
 tributed

* The errors which philosophers have been guilty
 of, relating to the organs of our sensations, are really
 surprising : one pretends, that our senses continually de-
 ceive us ; another, that they are perfected by exercise ;
 a third,

tributed to exercise, to be very erroneous; for exercise neither changes the texture of our organs, nor adds to their delicacy. It is true that, by exercising the senses, a greater quantity of nervous fluid is determined into their organs, whereby their sensibility is increased: but he, who endeavours to view minute objects for the first time, has the organ of sight equally tense with him who is accustomed to distinguish them at the first glance, although he can neither see nor remark any thing. It is not therefore to the organ but to the soul which receives the sensation, that we are to attribute the cause of this phenomenon.

This pretended delicacy of the senses arises only from the attention which the mind gives to the smallest impressions of objects affecting it; for whether we exercise our organs or not, the delicacy of the senses continues the same. But the

a third, that they possess not the least degree of certainty, and that each organ requires to be rectified by some other: phenomena which have been hitherto attributed to the organs, though they wholly belong to the understanding, and are mere mental illusions.

mind,

mind, being attentive to the sensations it receives, gradually becomes able to discern the smallest differences, which are too weak to be perceived by a single effort of the attention. Besides, it is not in the organs of sense that the soul perceives, but in itself; there the prospect of nature exists. We must therefore look on sensibility as a tablet, upon which are represented the images of the objects which affect us, and wherein the understanding perceives them. As these representations have parts of a stronger or weaker colouring, more or less luminous, more or less distinct: so some of these * more strongly engage the mind than others; those which are weakly coloured, and are the representations of very minute objects, are almost imperceptible; such are not perceived at first sight, but must be sought for with attention before they are found. If a painter perceive at the first glance the defects of a painting; if a shepherd easily distinguish his sheep; this proceeds from no other cause, than that both are accustomed to

* See Book II. Art. Exercise of the Understanding.

turn their attention to these objects more frequently than to any other. Thus a very great number of delicate sensations, received by a soul united to strong and elastic organs, are lost when united to organs destitute both of strength and vigour.

What I have said of the sensations is true in regard to ideas likewise; for it is only by long continued attention that we can make those delicate observations, and acquire those refined ideas which escape the generality of men.

Thus the difference of the force and elasticity of our fibres is a new source of the diversity of minds.

Hitherto we have seen in what manner the corporeal influences the spiritual part, how the constitution of the body forms the character of the mind; but we have not yet concluded: let us make further researches into this subject, and endeavour to discover truths hitherto enveloped with extreme darkness.

The more we study the soul, the more we trace its progress in the exercise of its faculties, and the more we examine its operations; the more we shall be forced
to

190 RECIPROCAL INFLUENCE *of the*
to acknowledge the powerful influence of
the corporeal on the intellectual part in
Man.

Organization renders MAN rational or insane.

The mind undoubtedly possesses the faculty of thinking ; and although all men were equally endowed therewith, organization would not the less regulate the exercise of this faculty : for thinking, when our thoughts are in regular succession, requires tension of the fibres ; the mind never can proceed alone, but requires the concurrence of the organs to form a sound judgment of things, or to reflect. Thus depending on the senses for its unfolding, on the organic elasticity and force of the fibres for the character of its ideas ; it likewise depends on the same organic elasticity of these organs, for the order of its thoughts and the mode of their succession ; this last dependency of the soul on the body is the cause of the principal diversities in minds.

*Regular thought ever requires a certain
degree of tension of the fibres ; the mind can
never*

never proceed alone, but needs the concurrence of our organs to form a sound judgment of things, or to reflect.

This principle, the importance whereof all who think justly must needs feel, now first presents itself; besides, it is so closely connected with the subject, that it requires to be fully explained, and to be established on the most demonstrative proofs. I therefore proceed to consider Nature in a manner never attempted before.

The mind is endued with the faculty of judging, but judges not always in the same manner; at one time its thoughts are connected with each other; at another they are without either continuance or connection; sometimes they succeed each other with rapidity, and sometimes the reverse.

Philosophers have attributed these phenomena to the soul, never supposing, what now appears a certain truth, that they wholly depend on the body. The mind judges not in any particular manner, but by means of some particular relations between it and the disposition of our organs; this disposition determines the character of our thoughts.

Although

Although ideas arise without our consent, and sometimes in opposition thereto, the mind always requires the assistance of the body to dispose them in succession, and determine them to some particular end.

When the body is exhausted with fatigue, when the head inclines forward on the breast, when the eyes are heavy and yield to the pleasing power of sleep, the blood steals through the veins with a gentle current; the sensations grow weaker by degrees, the senses lose their vivacity, and the mind traces out faint images only, resembling the almost imperceptible contours drawn by a very light hand.

In sleep, all our faculties are in action, although the imagination appears to be the only acting power; but the sensations follow, and the thoughts succeed each other with rapidity and confusion, and we neither compare nor are conscious of them: the mind, at that time, in appearance disengaged from matter, rambles after different objects, and from their irregular assemblage, forms those empty images which compose our nocturnal illusions.

On

On the contrary, in inflammatory fevers, when the blood rapidly circulates in the vessels, the sensations and ideas are strongly marked; nevertheless they succeed each other in confusion, whilst the soul neither compares nor is conscious of them. But with persons both healthy and awake, the sensations have a moderate degree of force, the ideas are distinct, the soul compares them, and disposes them in a regular and orderly succession.

If we maturely consider these phenomena, we shall discover their cause to consist in the different tone of the fibres, whilst asleep or awake, in a healthy or diseased state of the body. In sleep, this tone is too feeble to promote the justness of our thoughts, and the regularity of their succession; in an inflammatory fever, the tone is, on the contrary, too strong: a regular succession of thoughts, therefore, always requires a certain degree of tension, or rather a moderate degree of organic elasticity.

As these ideas are too singular, these principles too new, to be received without farther confirmation, I shall proceed to

give the clearest evidence of their truth. Man has two modes of existence, sleeping and waking; in this latter every spring of the machine is in action; in the former, those only which are allotted for the continuation of the vital functions.

Sleep is essential to Man; it is the necessary consequence of his constitution, and of the laws of the animal œconomy: by these laws he passes from a sleeping to a waking state; by these laws likewise the time of waking necessarily succeeds that of repose, and both are independant of every external cause. For Man can subsist for a determinate space only, in either of these states: by continual watching, the incessant motion of the fibres would destroy their organic elasticity, and prevent their future reparation; so by continual sleeping, though the fibres are not fatigued, the nervous fluid would be gradually exhausted by the action of the organs of life, and would never be repaired.

The continuance of either of these two modes of existence, would therefore necessarily be attended with a total cessation of vital motion.

At

At the approach of sleep, the muscles relax, the neck seems unable to support the head, the arms yield to their own weight, the senses become inactive, the whole body sinks into repose, and the blood circulates with a slow and gentle pace. By attending to the disposition of the organs of a man asleep, and to the phenomena accompanying it, we discover, that this state is produced by the defect of the organical elasticity of the fibres. This relaxation is even sensible to the touch, the skin of one asleep being more moist, and the fibres softer than when awake. But were this relaxation imperceptible by the senses, the simple examination of the causes of sleep will be sufficient to confirm the truth of the principle here established.

It is an incontestible fact, that every thing which impairs the organic elasticity of the fibres, occasions sleep; and that every thing which increases this elasticity prevents it. The loss of nervous fluid in coition is immediately followed by a slight drowsiness: after the conflicts of love, the vivacity of our motions is diminished, our desires are extinct, and we gradually sink into repose.

The loss of the same fluid by labour produces the same effect.

Though this loss of the nervous fluid be a principal cause of sleep, it is not the only one; let us repair it ever so much by fresh supplies of aliments, sleep will not be the less necessary; this may prevent it for a short time, but afterwards suffers it to return with new force. Thus the loss of nervous fluid is not alone productive of it; since, not being exhausted of this fluid, Man sleeps not the less; sleep therefore is occasioned by a disposition peculiar to the solids; and this disposition is no other than the lassitude of the organs, produced by the tension of the fibres when awake, or by the reiterated extension and contraction of the muscles in motion.

Sleep therefore is caused by the diminution of the organic elasticity of the solids, and by the diminution of their primitive elasticity; for it is certain, that an elastic body loses its primitive elasticity by frequent contraction. The fibres, after extreme tension, relax, and their organic elasticity being impaired, the circulation

is

is slowly performed, the secretion of the nervous fluid is obstructed, as likewise its influx into the organs of sense and motion; whence result a diminution of sensibility, a weakness, and a general languor of the sensations, desires and ideas*.

Although all communication between the soul and the body appears interrupted during sleep, these two substances however have a constant relation one to the other. The senses are ever open to the action of external objects, and their slightest impressions are conveyed to the soul; but too weak to engage it, they only glance thereon without leaving any vestige behind; strong sensations only can awaken and engage it. These are phenomena peculiar to sleep, and proper to confirm what has been already said concerning its causes.

These truths however are supported by other phenomena. The fibres of persons greatly disposed to sleep are feeble, and it is by sleep that our existence commences. The infant, whose fibres are endued but

* See a preceding Art. the disposition of the soul is ever congruous to that of the body.

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with a very small degree of organic elasticity, sleeps continually; children, whose fibres are very weak, sleep more than they wake; in proportion as they advance in years, that is, in proportion as their fibres acquire strength and elasticity, they endure more easily the want of repose; women, less strong and less vigorous than men, have likewise more occasion for sleep. Phlegmatic men *, whose fibres have but a small degree of organic elasticity, consume the half of life in that state, and people, when recovering from any disease, sleep almost continually.

Another cause is, that every thing which impairs the force of the circulation by decreasing the elasticity of the fibres, as heat, emollient liquors, and whatever benumbs the solids, as sulphureous vapours, spirituous liquors and opium, ever produces sleep.

In subjects which have died of a lethargy, or of any sleepy disease, we find the head disordered, and the other parts sound.

* It is remarked, that geldings are less vigorous than horses, and likewise sleep more.

Bonet

Bonnet *, who has collected a vast number of observations of this kind, "found a great quantity of extravasated serosities in the brain of one who had died of a lethargy, so that the cortical substance and the meninges were covered therewith. In another subject, that had never been attacked but once with any sleepy affection, the internal part of the cerebrum was full of extravasated serosities. In others, he found scirruses and tumours in the cortical part of this viscus. Finally, in some that had been affected with an habitual lethargy, the substance of the brain was found dry, and the vessels of the pia mater extremely distended with thick and grumous blood."

These observations prove, that this continual numbness is caused by the diminution, or even by the total suppression of the influx of the nervous fluid into the organs of motion and sense; a natural effect of its vicious secretion, during the distension of the cortical substance of the

* See the Sepulcretum Anatomicum.

brain, of the defect of the oscillatory motion of the distended *meninges*, of the compression of the medullary substance by the extravasated serosities, or the defect of this fluid as in a siccidity of the brain. Besides it is well known, that the simple pressure of this *viscus*, after the removal of the *cranium*, produces sleep, by preventing the influx of the nervous fluid into the origin of the nerves, and consequently by weakening the organic elasticity of the fibres, as the preceding causes*. But the most conclusive reason is, that sleep cannot take place whilst the body is violently agitated, either by a fever, or by any violent passion, equally capable of producing a tension of the fibres.

If the relaxation of the fibres be the cause of sleep, the re-establishment of their organic elasticity by repose must be the cause of waking. This cause, which

* I have many times experienced this after the operation of the Trepan: the slight pressure on the brain ever produced an obscurity of sight and a noise in the ears; a pressure somewhat more strong was followed by drowsiness, and afterwards by perfect sleep; all these symptoms ceased upon discontinuing the pressure.

is necessarily deduced from the nature of things, I shall demonstrate by its phenomena.

On the conclusion of undisturbed sleep, the fibres insensibly become more tense, the complexion more lively, the circulation more quick, the impressions of objects on the senses more strong, and the soul again communicates with external objects. When we have once fallen into a deep sleep, we are not awakened from it but by very lively sensations; but when the usual space of time allotted for rest is nearly expired, the least noise awakes us, and ever more easily, the nearer we are to the hour of awaking: so that the first degree of sleep is scarcely to be distinguished from waking, and its last degree is confounded therewith. Sleep, therefore, comes on and goes off by insensible degrees; similar, in this respect, to the obscurity of night, which gradually increases till it arrives at midnight darkness, and afterwards decreases by the same gradation. Let us therefore conclude, that the fibres possess a greater degree of organic elasticity in Man when awake than when asleep.

sleep. It is then obvious, that whilst the fibres are relaxed, there is no regular series of thoughts; the mind passes without any regularity over the sensations it has received, its thoughts succeed each other in confusion; and, if at any time they form a regular series, it is only whilst the fibres are tense. In the agitations of a painful dream, the thoughts are somewhat regular; but in the mean time, Man is greatly disturbed, and, when he afterwards awakes, finds himself oppressed with fatigue, and wet with sweat and tears.

Thus it is only by the relaxation of the organic elasticity of our fibres, that sleep interrupts the succession of our ideas; the order of our thoughts therefore depends on the state of the body.

I imagine, the proofs already offered in support of this will be found satisfactorily conclusive; but that no proof may be wanting, and that the principle may be incontrovertibly established, let us examine the state of the body relatively to the succession of the ideas in madmen, those living examples of the vagaries, or, if you will, of the ravings of this distempered state of human reason.

There

There are many species of madness, in every one of which the mind forms wrong judgments of things. In each species of madness, sensations and ideas of every kind are produced, but have neither order nor connexion; and in this incoherent succession, in this chaos of sensations and thoughts, the will acts not, but lets the images of things succeed each other in disorder. Attention not being sufficiently strong, the soul is not conscious of its thoughts; so that illusion is often admitted amongst, and intimately connected with them.

This, however, may be observed with respect to the several species of madness; that state of the soul, which is accidental in the one, is natural and constant in the other sorts: but all equally result from an inability to attend; this inability I shall demonstrate to be wholly dependent on the constitution of the body.

Physiologists have sought in dead animals the causes of this disordered state of the soul in living animals, as if it proceeded from the unnatural conformation of some organ, which must necessarily

cessarily always exist, never dreaming that it might be occasioned by some change in the organic elasticity of the solids, the only principle by which these phenomena can be explained. A striking example of the ill-succes of most physiological enquiries, and a proof that our efforts to discover truth serve often to mislead us, and to remove us to a great distance from it!

By comparing the state of the body of one that died in perfect enjoyment of reason, with that of one who died in a state of madness, we shall undoubtedly discover many considerable differences; such as the distension of the vessels of the *meninges*; the inflammation of these membranes; the extravasation of lymph into the *sinuses* of the brain; the ficcidity of this *viscus*, and of the origin of the nerves; appearances commonly seen in the bodies of the latter, but never in those of the former. This difference, which is here supposed to be the cause, is only the effect. Considered as the effect, it may conduct us to the knowledge of the true principle; but in our enquiries we shall proceed with greater success, by comparing
ing

ing the state of the solids of a man in perfect reason, with that of the solids of one who has lost it.

The different species of madness may be reduced to two; which are to be distinguished not by those vagaries of reason which are common to both, but by the character of the thoughts; they are designed under two general denominations; furious madness, when the thoughts are daring, and the emotions of the soul vehement; *insanity* or *idiotism*, when the emotions of the soul and the thoughts are weakly expressed.

There is a rigidity of the nervous system, when the roving of the soul are attended with fury, as in frenzy, inflammatory fevers, drunkenness, and the hysteric affection; there is a debilitation thereof, when the same roving are indicated in a tranquil and languid manner, as in insanity, dotage, and in that melancholy madness, which is occasioned by the use of narcotics. Every one may be convinced of this, by simply inspecting a body in these different states, and by examining the phenomena.

With

With regard to that affection of the mind which is produced by drunkenness, it is obvious, that spirituous liquors are peculiarly adapted to produce a rigidity in the fibres.

The saline particles with which these liquors are impregnated, and the spirits with which they abound, when received into the stomach, first irritate its membranes, and, being conveyed into the intestines, irritate their coats: this irritation is immediately followed by a spasm of these organs, propagated throughout the body, by the correspondence of the nervous system which affects every part, but more especially the *meninges*.

This violent tension of the meninges is presently after produced in a more direct manner: the salts and the spirits gradually pass into the fluids, and, being conveyed to the brain with the blood, increase the tension of its membranes, and the circulation is rendered more impetuous. This violent spasm, at intervals, compresses the cavity of the nerves, and interrupts, in whole or in part, the perflux of their fluid:
hence

hence proceed those irregular and convulsive motions of the muscles, that staggering and total loss of sense and motion, observed in persons who have died in a state of inebriation. By comparing the tone of the solids of a drunkard, with that of the solids of a temperate person, we find the fibres moderately tense in the latter, and extremely so in the former. In drunkenness, the countenance appears inflamed, the eyes red and fiery, the vessels of the face distended, the limbs at first are flexible, afterwards they are stiff and convulsed; the regularity of muscular motion is destroyed, the body is unstable, the senses are dull, the sight is troubled, and the objects looked upon seem to waver. Here, if we may judge by the senses, is an extreme tension of the fibres, which very nearly approaches to rigidity, and this rigidity is proved on the testimony of facts.

If this spasm be so visible in the strong and gross organs, what must it be in the fibres of the *meninges*, which are incomparably more delicate and more sensible!

The effects, which are produced in the solids in drunkenness, by the irritating
and

and caustic particles of the liquors, which have been drunk, are produced in fevers in a much higher degree *. In the hysterical passion, the spasm of the nervous system is ever considerably greater than in fevers; but this spasm arises not instantaneously: at first, a numbness is felt about the hips and loins, the abdomen and stomach are distended, a painful oppression is felt at the breast, anxieties at the heart, a general numbness and shivering of the whole body, violent pain is felt in the head, a tension in the forehead and temples, the sight is troubled, involuntary tears flow, respiration is difficult, the navel is drawn inwards, the heart palpitates, the pulse is hard and unequal, the extremities become cold, the *oesophagus* is closed, respiration interrupted, the voice dies away, the mouth is convulsed, the arms and hands are violently contracted, the body is contorted, and every limb agitated with convulsive motions.

* They who are acquainted with the constitution of the human body and the causes of diseases, know that fevers are always produced by a spasm of the irritated nervous parts.

Finally,

Finally, if we carefully examine the body of a madman, we shall find the fibres to be tense, the pulse extremely hard and unequal, the eyes fiery, as in rage, and the body affected with convulsive motions, more or less strong, according to the force of the frenzy, but less apparent than in the diseases mentioned above; nor is their fury so extreme. This extraordinary vigour, these impetuous motions, these terrible convulsions which accompany drunkenness, the hysteric passion, frenzy, and inflammatory fevers, are evidently the effects of the violent influx of the nervous fluid into the muscles, occasioned by the violent and irregular contraction of the irritated meninges. That there is a spasm, a rigidity in every case of this kind, is obvious from the attendant symptoms, and from the state of the organs of subjects which have not survived this disorder.

In the dissection of hysteric women, we almost always find every part of the body unaffected, the organs of generation

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excepted *: “ In some the *testes* have
 “ been found distended with a thick and yel-
 “ lowish liquor, of a very offensive smell;
 “ in others the *testes*, spermatic vessels, and
 “ vessels of the *uterus*, were distended with
 “ a whitish lymph, viscous and of a very
 “ pungent smell; in others, were found
 “ polypous excrescences adjoining to
 “ the *uterus*; the *uterus* itself has been
 “ observed nearly filled with a fluid, in
 “ colour as if tinged with saffron and cor-
 “ rupted; sometimes the membranes
 “ have been inflamed and distended with
 “ grumous and thick blood.”

From the symptoms accompanying this disease, it is evident, that the spasm of the nervous system, occasioning the disorder of the functions of the body, begins at the uterus, which is irritated by the corrupted liquor contained in the spermatic vessels, and is afterwards gradually propagated by the nerves to the other parts,

* See Vesalius, L. 5. c. 15. De humani corporis fabrica. Riolanus, Antropol. Lib. 2. pag. 35. Binninganus, cent. Q. cap. 90. Manezeta, Miscellan. Curios. Natur. dec. 1. obs. 32. Diembroeck, Lib. 1. Cap. 24.

even to the membranes of the brain, where it sometimes leaves visible marks of irritation.

" In subjects which have died of inflammatory fevers or of madness, many ramifications of the *meninges* have been found distended, and these membranes themselves inflamed *; in others have been discovered many sanious serosities in the ventricles of the brain, many vesicles, or rather *varices* full of sanious lymph, and the *plexus choroides* inflamed: in others the vessels of the *meninges* were livid and full of thick blood, many serosities were found in the ventricles of the brain, and a livid polypous concretion in the *sinus falci-formis*; the other parts of the body were sound, the brain alone being affected." This dilatation of the blood vessels, these *varices*, these distensions, these extravasations of sanious serosities, and inflammations of the membranes of the brain, are evidently the effects of violent, irregular,

* See Miscellan. Curios. Nat. dec. 2, pag. 234. Anno 6. & dec. 2. pag. 162. Anno 4.

and obstructed circulation, occasioned by the spasm of the nervous system, and of the solids in general. For when a part is affected with a spasm, the vessels of which it is composed are violently contracted, and as the coats of the arteries are more strong than those of the veins, so much the more they resist their contraction; the blood continues to flow on to that part with ease, but in its return is obstructed; whereby it accumulates in these vessels, and excessively distends them: hence these inflammations, distensions and *varices*. When the distension is extreme, the vessels permit their contained fluid to permeate their coats: hence those extravasations of the lymph, blood, and those polypous excrescences which proceed therefrom. Finally, if we observe that caustic acrids, as the *hyosciadium*, *solanum verum*, and generally every thing that irritates the nerves and renders them rigid, either taken internally or applied outwardly, produce the most terrible delirium and madness; whilst lenients and antispasmodic medicines restore reason, we shall be convinced, that this perturbed state of the mind

mind is wholly produced by the spasm of the nervous system, but more especially by that of the membranes of the brain. Hence it is evident, that furious madness proceeds from a rigidity of the fibres; I shall now shew that insanity or idiotism is occasioned by their relaxation.

Insanity often succeeds madness, and that instantaneously; this phenomenon is very natural, as the violent tension of the fibres must be followed by their relaxation: when this debilitation is considerable, and the organic elasticity of the fibres is so greatly impaired, that it requires some considerable time before it can be restored, the mind recovers not the tone adapted for reason; it only changes the species of its folly. This is more particularly observed in inflammatory fevers, where furious madness opens the disease, and idiotism concludes it. Whilst the nerves are convulsed, and the circulation is vehement, Man acts with violence, his ideas are confused, he loses all knowledge, and utters, with a furious aspect, incoherent expressions: but when the morbid humours have taken another course, when the black

poison which occasions his disease is discharged from his vessels; weakened by the violence of his transports, he remains a long time destitute of strength, deprived of reason, insensible either of the evil or danger of his condition, and is reduced to a state of infancy, which is of so much the longer duration, as the debilitation of the elasticity of his fibres is more extreme; for in these cases the effect is ever equal to the cause.

To the foregoing may be added the analogy between the disposition of the soul and body during sleep, and the disposition of these two substances during insanity. For this state of the soul, whilst Man is awake, perfectly corresponds to that whilst Man is asleep; the succession of sensations is the same; the exercise of thinking, and the action of the organs are the same likewise; in both, the fibres are relaxed, and the circulation languid: whence it appears, that these two states have similar causes.

This kind of insanity is oftentimes produced by excessive study, by violent passions, by a considerable loss of semen, and

and by every thing which debilitates the organic elasticity of the fibres. This is confirmed by comparative anatomy: for the state of dotage, that is, when the sensations and ideas are combined without order, is precisely the same as when the body is feeble, the strength is exhausted, and the organs are inelastic. It is therefore obvious, that this alienation of mind is the effect of the extreme impairing of the organic elasticity of our solids.

Furious madness proceeds from the rigidity of the fibres; idiotism or insanity from their relaxation; and the state adapted for reason from their moderate elasticity: such are the secret causes of the order which obtains in our thoughts. Hence it appears, that a greater or less degree of tension of the fibres can make a man either rational or insane. Reason and madness must therefore depend on the mechanism of the body, and not in the least on the soul, as philosophers have falsely supposed.

Having contemplated these rovings of the soul, and discovered their causes in the different tones of the fibres, let us proceed to assign the reason of these phenomena.

A regular series of thoughts ever requires, in order to its formation, that the mind be intent on the object of its judgments; this intenseness of the mind is ever accompanied by that of the body. During meditation, the pulse beats more strongly than when we do not meditate, and so much the more strongly, as the soul is the more deeply engaged in meditation. Thus in cataleptics, whilst the soul is involved in the most profound reflections, the blood circulates with greater freedom and force, the complexion becomes more lively, respiration more free, and every function of the body is more perfectly performed. During meditation the whole body is violently tense, but particularly the *plexus nervosi*, and the membranes of the brain.

Too great or too long application increases this tension, even so far as to excite a stupor in the head, and kindle up a fever in the veins: studious persons frequently experience this, I myself have, many times.

The soul, during meditation, not only affects the body with a degree of tension, but with-

without its concurrence cannot operate alone. In chronic diseases, during a state of convalescence, and after a considerable loss of semen, we can neither reflect nor meditate, whatever efforts we make; we think very little, and our ideas are vague and unconnected. Even immediately after profound meditation, the mind being fatigued, indulges itself in roving, although the will oppose; we indeed continue to think, but our thoughts are altogether irregular; we remain awake, but experience the effects of sleep; imagination traces the same airy semblances, the same fugitive shades as during sleep.

No regular series of thoughts can be formed without a tension of the fibres: this tension has fixed bounds, determined limits, beyond which the succession of our ideas cannot proceed. When the fibres are too tense, as in drunkenness, in fevers, and in violent head aches, let us ever so much attempt to reflect, all our efforts are vain, the soul is either in a *delirium* or in a *stupor*. It has been proved, that in regular thought the understanding* is sub-

* See Book II. Art. Exercise of the understanding.

ject to the will; that this exercise of reason requires a certain tone of the solids; and that the tone of the solids necessary to reason has a certain extent: this tone, therefore, must be constantly existent in Man, whilst his organs are obedient to the will; but is not found either in a state of rigidity or relaxation, two states of the fibres which have this in common, that they both equally free the body from subjection to the will.

If we notice the power which certain aliments, fruits, and liquors have on the body, we shall be convinced that it is superior, or at least equal to that of the soul over the material substance to which it is united. Again, if we compare the empire of the different faculties of the soul over the body, we shall be convinced*, that the power of sensibility is much greater than that of the will, and incomparably more so than that of the understanding or imagination. That of sensibility and imagination is universal; that is, it influences both the muscular fibres and their *fibrillæ*, the organs of sense and

* See Book III. Obs. 62.

motion;

motion; whilst that of the will is restrained to the latter of these only. But none of these faculties has any power over the body, but by the nervous fluid; when this is deficient, or when it has lost its energy, or even when the elasticity of the fibres is impaired, it is obvious, that the power of the will is at an end. Even when this fluid is violently impelled into the muscular fibres, either by sensibility or by some other cause, with greater impetuosity than the will can impel it; it is evident, that the rigidity is not removed, but confirmed thereby, if it proceed from a violent influx of the nervous fluid into the fibres.

Hence the reason why the violent passions, as rage, fear, terror, affect us with a kind of momentary madness; why the efforts we make to reflect, when fatigued by meditation, only serve to increase our inability to think; in a word, why the rigidity and total relaxation of the solids deprive the soul of the free exercise of its faculties, and are the causes of madness, the degree and force whereof is proportioned to that of their principle.

Let

Let us therefore conclude, that *as the mind cannot act alone, it ever requires the concurrence of the corporeal organs to reflect and meditate, and that the unfolding of its faculties entirely depends upon organization.*

I have now only to offer a few observations on the subsequent phenomena, to confirm what has been said on the same subject elsewhere*. Certain hypochondriacs see visions at mid-day, and with their eyes open: some fancy they behold a continued series of phantoms and hideous spectres, rapidly succeeding each other; others, a series of agreeable objects, flitting shades, female forms, magnificent scenes, which offer themselves in succession, and are seen like objects really existing; so that the deception of these visionary representations is so strong, that they believe them to be realities.

When speaking of the colourings which the sentiments of the soul communicate to objects, and of the illusions of the passi-

* See Book II. Art. Some singular phenomena explained, concerning the effects of the passions on the understanding.

ons analogous to the facts related above, I observed, that physiologists had attributed these phenomena to the nervous fluid; and that, to account for it, they had imagined, "that this fluid, which is naturally
 " subject to the empire of the soul, be-
 " comes its superior in these affections;
 " that in the organ of sight particularly,
 " it assumes every successive modification
 " representative of objects, which had
 " before affected it." I demonstrated, that physiologists improperly confound the operations of the senses with those of the mind; I likewise proved this phenomenon to be very simple, and only mysterious from our misapprehension of it. I observe now, as I did then, that these visions of hypochondriacs are only sensations renewed from the memory, the empty phantoms of a soul violently agitated, wholly engrossed and misled by its pleasures or its pains, and unable to return within itself to examine objects.

I have already proved, that the soul, when strongly affected by any object, is blind to every other, it being no longer able to attend thereto; I shall now offer a physical reason of this phenomenon.

It

It is only by attention, that we can distinguish in the soul the real impressions of things from sensations re-produced. Besides, the presence of mind necessary to reflection, requires in the fibres a certain degree of tension, the *medium* between rigidity and relaxation. In inflammatory fevers, and in the hypochondriac disease, there is the same rigidity as in the inflammation of the stomach, contracted by the use of some acrid aliment, or by poison: for the irritation of this *viscus* affects the whole nervous system, and more especially the membranes of the brain. In all these cases, reason is extinct; for the will has no longer any power over the organs, as has been already shewn. Thus, abandoned to itself, the mind employs itself in reviewing the objects which formerly affected it; but wanting the attention necessary to discern whether their image be re-produced or not, it mistakenly imagines them present, and really existing.

When the spasm ceases, the mind instantly recovers its reason, these imaginary objects disappear, the deception ceases, the patient finds himself in his chamber, surrounded-

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surrounded by his disconsolate friends, and relates to them the subject of his visions.

The same effects which are produced by acrid humours on the body in fevers, and by irritating aliments in the inflammation of the stomach, are likewise produced by an inflamed imagination, and by violent passions; examples, which confirm this, daily occur to our observation.

When the soul is engrossed by any violent passion, when the imagination forms a lively picture of the charms of a favourite object, represents it as the idol of the heart, adorns it with every attractive grace, and suffers it to make a deep impression on the mind; by degrees the charms, in which we have clothed and decked it, dazzle the sight, and impose even on ourselves: then wholly engaged thereby, we are insensible to every other object, and misled by these phantoms, we take our visions for realities.

Thus, in the extreme anxieties of a soul tormented by remorse, the guilty wretch continually revolves in his mind every crime he has committed, and remains a miserable victim to despair. Should
sleep

sleep close his eyes; his sleep is only a frightful *delirium*, the consciousness of his crimes preys upon his heart, and terrifies him with horrid visions. He dreams he hears the groans of those he has destroyed, thinks he sees their ghosts rising from their tombs, and imprecating the justice of heaven on him; the darkness of hell covers the face of the earth, the furies hiss in his ears, shake their torches at him, and pursue and haunt him wherever he goes; devils, fiends, every monster in fable beset his soul; harrassed with these horrible visions, the wretch awakes in affright, vents loud cries, starts back with horror at the approach of his friends, whom now he knows not, and clasps the next thing he finds in his arms, and fancies he clings to the altar.

Thus it is that the passions produce visions and trances; thus it is that enthusiasm is changed into a delirium, and thus it is that fanatic minds sometimes fancy themselves inspired.

This discourse on the succession of our ideas, and the order which obtains in our thoughts

thoughts, recalls me to the point from whence I first set out. I then proved that the depth, the justness and sublimity of ideas, required fibres strong and greatly elastic, and that these characters of our ideas varied together with the organization: but the different degrees of the strength and elasticity of these organs in different individuals, which at first appeared of so little consequence, produce other very surprising effects. This principle, simple as it is, abounds in consequences; it is this which enables us to discover truths, hitherto concealed from the learned, and involved in profound darkness. Let us endeavour to draw from this hidden source some additional knowledge, which may throw light on some very obscure subjects, and scatter flowers over the thorny paths of philosophy.

Organization renders Imagination the predominant Character of the MIND.

The exercise of regular thought is to the mind, what voluntary motion is to the body; that is, a state of constraint which

the soul commonly yields to with reluctance, and ever endures with pain.

If we follow the mind in its operations, we shall observe, that when abandoned to its own activity, it acts without rule and without method; it never acts with order, but when necessity * obliges it thereto, and returns to its former state immediately, when freed from restraint. What renders the regular exercise of thought more fatiguing than the irregular, is the attention which it requires; the difficulty of fixing objects in the mind, in order to consider them † without distraction, and the efforts which are necessary to discern their different relations; efforts so much the more painful as the objects happen to be naturally volatile, and fall not within the cognizance of the senses. But what renders these efforts painful, is that tension of the fibres which this intenseness of the mind requires, for the tension of the fibres ever produces in the soul an unpleasing sentiment more or less

* See Book II. Art. Regular thought considered relatively to the degree of attention which it requires.

† Ibidem.

strong, but ever proportionate to its force. We must therefore constantly recur to physical causes, to account for these phenomena of the mind.

By following the mind in its operations, it is easy to discover, that when it ceases to consider objects attentively, it no longer judges of their true relations; in this case thought becomes imagination. Thus, of all the sciences, geometry requires the least aid from imagination, as it continually fixes the attention on one particular object*.

I have demonstrated, that regular thought fatigues the mind much more †, and much sooner than revery; I have likewise shewn, that when the mind is fatigued, it no longer fixes upon any object, and ceases to consider attentively ‡; I have shewn,

* It is not that he who discovers a demonstration has no occasion for invention; but that the demonstration being once discovered, others have only to pursue it: only the inventor of a science has occasion to reason; those who succeed him have no more to do than to repeat his reasonings.

† See Book II. Art. Regular thought considered relatively to the degrees of attention which it requires.

‡ Book III. Obs. 6.

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that the attention of the mind is ever proportionate* to the strength and organic elasticity of the fibres. Whence let us conclude, that a *soul united to a delicate and feeble body must possess more imagination than judgment.*

The transition from reason to imagination is very easy. If the mind, during reflection, be distracted by any sensation, it loses sight of its objects, is engaged by some analogous relation, and wanders from one to another, till it entirely loses its first engagement; it at length perceives itself bewildered in the labyrinths of imagination, even whilst it fancies itself attentively pursuing its former reflections. The greater the sensibility, the more difficult it is to prevent these wanderings: *whence it follows, that the Man whose organs are delicate and greatly sensible must possess more imagination than judgment.*

If the transition from reason to imagination be very easy, it is likewise very

* Book IV. Art. Organization renders the understanding extensive, just, superficial, confined, erroneous or gross, &c.

natural. Whatever our thoughts may be, some secret attractive, some hidden charm, recalls the mind to its favourite subject. The soul, ever delighted with pleasing sentiments, resigns itself wholly thereto, and its natural love of happiness prompts it to perpetuate the pleasure it takes therein. The mind, thus relishing those pleasures, wishes to increase them; wherefore it successively occupies itself in examining, one after another, all the agreeable objects which are in any way connected with those which affect it with delight, and thus thought becomes imagination. Man therefore has perpetual need to be on his guard against these wanderings, and the more so in proportion to his greater share of sensibility; for in this case the attraction of pleasure is most powerful. In this respect therefore, *the soul which is united to very sensible and elastic organs, possesses more of imagination than of judgment.*

Organization characterises the THOUGHTS.

Organization not only determines our aptitude either for imagination or for

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judgment, but also often forms the cha-
racter of our thoughts.

When the exercise of the understand-
ing is wholly imagination, the nature of
its images and ideas is ever determined
by that of the sensation or sentiment, then
affecting the mind. If this sentiment or
sensation be agreeable, there is a series of
pleasing illusions and agreeable images: if
painful, there is a succession of sad and
hideous representations. The same phe-
nomenon is also evident during sleep: our
dreams are pleasing or terrifying, accord-
ing to the sensations we then experience.

If we take a retrospective view of what
we have said concerning the succession of
our ideas, when speaking of the exercise of
our mental faculties, we shall find this
phenomenon very simple. The mind, if
left to itself, ever proceeds by analogies:
the thoughts therefore must be gay, when
the soul is affected with pleasure, and sad
when affected with pain.

* This is very evident in the *furore uterinus*, a dis-
ease produced by the irritating quality of the semen,
depraved by a too long continuance in the secretory
vessels, and in the *incubus*, or night-mare.

The

The impressions received by the organs of the body are conveyed to the soul, fix there, and serve as a point of departure, from whence it sets out when it commences its future operations; from this time forwards it is engaged by analogous images and analogous thoughts only.

And as the soul ever perceives the disposition of the body during sleep, although it appears to be then freed from its subjection to the senses; the same analogy must be observed in man asleep, as when awake. Hence the reason why the nature of dreams is ever analogous to the state of the body, and to the sensation then affecting the mind. Hence too, the reason why, when the sensation is agreeable, we enjoy during sleep a series of pleasing deceptions and agreeable images; but, when it is painful, are terrified with dismal thoughts and frightful illusions.

What has been said above concerning the imagination, is properly applicable to irregular thought only; its regular productions require the same physical disposition which reason does.

The mind must compare and combine its sensations and its thoughts in many dif-

232 RECIPROCAL INFLUENCE of the
figent shapes; to form new productions
therefrom; this requires attention, and
consequently force and elasticity in the
fibres. Thus imagination is weakened by
degrees, together with the organic elasticity of
the fibres; in proportion as they become more
tense or more rigid, the mind cannot compare
or combine its sensations, and becomes inac-
tive; even so far as to be no longer able ei-
ther to imagine or to invent; it then ceases to
draw consequences from principles, and
only acts by the aid of the senses.
Nevertheless, if regular imagination re-
quires the elasticity of our organs, it re-
quires it in a less degree than reason; for
its objects are neither necessarily depen-
dant on each other, nor closely connected.
its productions are only detached parts,
where the mind has nothing to do but to
weave them into one tissue. Finally, be-
cause their connection depends not on the
combination of a great number of thoughts
or ideas which are naturally profound
and difficult to be investigated, as those
of reason commonly are; a single stroke
of the pencil shall frequently serve to con-
nect the parts of which the group is to be
com-

composed. And although regular imagination may be a state of constraint like reason, it nevertheless fatigues the soul much less; for imagination has ever the choice of its subjects, and this choice is ever directed towards agreeable objects, whilst reason, ever tied down to follow nature, must needs frequently find an irksomeness from painful researches and dry reflections, and is ever busied in a disgustful employment. Imagination therefore not only requires less attention than reason, but also possesses many pleasing attractives besides.

Imagination requires less force of the organs than reason, but a greater share of organic elasticity of the fibres, or rather a greater share of sensibility. For it is not always by a careful examination of objects, nor by a series of many successive combinations, that the imagination forms new productions: the most happy strokes of fancy often present themselves to the mind spontaneously, when we least think, and are never the fruit of pains or plodding. It is therefore only by variously combining objects, by leaving (if I may be allowed the expression) the mind to

rove at will, and by employing no more attention than is necessary to collect the result of its thoughts, and to select therefrom such as are for its purpose. The greater our sensibility, the more liable we are to distraction, the more affected by analogies, the less attached to material objects, and the more capable of those happy, but fortuitous combinations, the true source of ingenious fallies, and of the noblest productions of the human mind.

Thus therefore men who have but little sensibility, and are of robust organs, can possess but a small share of imagination: men, who are but little sensible, and yet delicate, must possess more. They, who are feeble and of great sensibility, yet greater: and they who are extremely vigorous and extremely sensible, most of all. Eager to rise above the sphere of the senses, these can alone soar above this low world, and with a bold wing traversing the boundless tracts of æther transport themselves to worlds unexplored before.

I have proved, that reason is not essential to the soul, and that the imagination

tion depends on the elasticity and force of the fibres, I shall now demonstrate, that remembrance and recollection are modes of the soul's existence, and wholly dependent on organization.

Remembrance and Recollection dependent on Organization.

Memory is almost always confounded with remembrance and recollection, qualities very different, and which ought to be carefully distinguished*. Memory, or the faculty of retaining our sensations and ideas, is peculiar to the soul, and independent of every physical cause: but remembrance and recollection (the one whereof is the faculty of discerning our sensations and ideas, when re-produced to be those which we have before received; and the other, that of re-producing them at will) although intellectual powers, nevertheless wholly depend on organization.

* See Book II. Art. Of remembrance and recollection.

Acute

Acute diseases of a long continuance ever impair both remembrance and recollection; chronic diseases are ever accompanied with the same phenomenon; but more especially the *hernia spinalis*, when the tumor is opened, and even still more than this, those sleepy diseases which ensue from a considerable loss of semen*. Great drinkers, apoplectics, those unfortunate persons who have undergone the operation of the trepan, those who have been covered after hanging, frequently pass the residue of life, unable either to remember or to recollect.

The microcephali, whose brain is of smaller dimensions than common, are generally destitute of these faculties.

Finally, in the history of the academy of sciences of Paris, Année 1791, pag. 57. we find the case of a child, eight years of age, that lost its † memory by the excessive heats of summer, and never recovered it whilst the heats continued.

* See Book III, Observations 12 and 15.

† Even here remembrance and recollection are signified, as I observed above, although the term memory be made use of.

Since

Since the influence of the body on the soul has fixed and constant relations, the decay and loss of remembrance or recollection are therefore produced by causes common to every instance abovementioned. By what these cases have in common, it clearly appears, that the cause of this decay, and loss of these powers, is only the diminution of the organic elasticity of the nervous system, but more especially of the membranes of the brain; a diminution common to every subject here noticed, but produced in different ways. In the one, by a defect of the nervous fluid, as in *microcephali*, and those who have been exhausted by immoderate exertion: in others, by a violent tension of the fibres, as in apoplexies, those who have been recalled to life after hanging, and those who have undergone the operation of the trepan: in others, by these two causes united, as in persons affected with acute or chronic diseases.

We shall be fully convinced of this truth, if we consider, that every thing which impairs the tone of the solids, either by vitiating the secretion of the nervous fluid in the brain, or restraining its action, produces

238 RECIPROCAL INFLUENCE of the
duces the same effect. The immoderate
use of cooling liquors, spirits, *opium*, *hy-*
osciamum, and other narcotics, long and
profound sadness, fear, terror, and every
other violent passion of the soul, too long
continued watching, and too profound me-
ditation, all which are adapted to destroy
the elasticity of the fibres, occasion the
loss of remembrance and recollection. Fi-
nally, the decay, and even the loss of
these powers, are often occasioned by ex-
cessive heat; in this case, it is visibly pro-
duced by the diminution of organic elasti-
city. Every thing concurs to establish the
loss of elasticity, as the cause of this phe-
nomenon, as I have observed, in collect-
ing the different observations made upon
this subject, and reducing to fixed points
their numerous variations.

If more proofs were required, I would
here repeat what has been said elsewhere
concerning the order of our thoughts.
On the approach of sleep, and at the close
of wearisome meditation, when the fibres
relax and the circulation is languid, when
the senses are inactive and every organ is at
rest, the soul appears to be then detached
from the body, and wanders without any
scope;

scope; remembrance is lost, we recollect nothing, not even things which are the most familiar. When sleep closes the eyes, objects which affect us whilst awake are retraced in the mind, but the mind remembers them not, and this forgetfulness is so much the more extreme as the sleep is more profound, that is, as the fibres are more relaxed; the mind recovers not these powers, till the elasticity of the fibres is re-established by repose.

But if the loss of remembrance and recollection be often produced by the relaxation of the fibres; it is sometimes occasioned by their rigidity. In inflammatory fevers, in drunkenness, nothing is remembered, nothing recollected. How frequently are seen persons when affected with either of these, that know not their friends, children, wives, and even forget their own name! How many have been reduced to the same miserable state from the irritation of the meninges by splinters of the *cranium*, or by some extraneous body!

Remembrance and recollection, therefore, require a moderate degree of tension of the fibres, as does the regular exercise of thought.

The

The reason of this phenomenon is easily comprehended. Memory is a passive faculty; but remembrance and recollection are the * results of our several intellectual faculties combined. The one is the state of reflecting on the sensations and the ideas deposited in the memory: the other is a state of intenseness, by which the soul forces itself to recall these sensations and these ideas. Remembrance and recollection therefore of necessity require attention, and consequently a moderate degree of organic elasticity in the fibres. It is therefore obvious, that when the subjects of our observations have not the power of rendering the fibres tense, the mind is devoid of these powers.

Hence we must conclude, that remembrance and recollection are determined by the tone of the solids, and even depend on organization.

Hitherto I have shown how the different degrees of the elasticity of the fibres contribute to the diversity of minds, and

* See Book II. Art. Of recollection and remembrance.

how this mechanism explains these phenomena, reconciles them to Nature, if I may be allowed the expression, and divests them of the marvellous; this cause, however simple it may appear, produces many other very surprising effects.

Organization renders MAN intelligent or stupid.

Penetration, that noble faculty of the mind, by which we discern truth amidst the darkness surrounding it, by which we discover the most remote relations of things, depends on the tone of the fibres, and on the state of the body, equally with remembrance and recollection; for being wholly owing to the capacity of the mind*, and to the number of ideas and sensations, it consequently must depend on the number of the senses, and on their good organization. “ Nevertheless the senses of an idiot appear sound and well constituted; he has likewise, as other persons have, sensations of every kind,

* See Book II, Art. Penetration, stupidity, &c.

“ and he arranges them in the same order,
 “ when he acts like others: but he has
 “ but very few ideas, and is deficient in
 “ judgment and penetration.”

Penetration depends on the number of the senses, and their good organization; but depends not wholly thereon. To discover the relations of things, it is not sufficient to have a great number of sensations, there is also necessary the power of calling them to mind when occasion requires. Without this faculty, the sensations deposited in the memory would be useless; without it, the mind could compare its present sensations only, all its judgments would be determined by the senses, and Man no longer act as Man, but as the most stupid of beasts. Besides, the number of the senses and their good organization, penetration likewise requires the same elasticity and force in the fibres as recollection.

But even this will not suffice. To discover the relations of things, the mind must compare them in their different aspects, and variously combine them. Except this, admitting every other qualification, the best organized senses, the most
 ardent

ardent desire of attaining perfection; yet so long as Man continues unable to combine his sensations, it will be impossible for him to acquire knowledge. *Penetration therefore requires the same organic elasticity of the fibres as reflection.*

Every man has a certain number of sensations, but all men have not equally the power of recalling, comparing, combining, and arranging them; qualities indispensibly necessary to the discovery of concealed relations. These qualities idiots have not; and this inability to recollect or reflect, is to be wholly attributed to the state of their organs.

If we compare the body of an idiot with the body of a rational person, we shall find many considerable diversities between them. The most conspicuous is the small dimensions of the *cerebrum*. *Microcephali** are idiots by nature; they have neither conception nor judgment: on the contrary, *macrocephali* are very ingenious.

Another difference is the bulk of the body, in comparison of the size of the

* See Book III. Obs. 15, 16.

244 RECIPROCAL INFLUENCE of the head. Extremely large and fat persons, are commonly but a small remove from stupidity; whilst small and lean persons are generally the reverse.

But all idiots are not so by nature; some gradually arrive at that state, the most ingenious equally with others. Acute diseases of long continuance *, and likewise chronic diseases, impair the penetration. The considerable loss of nervous fluid, either by coition, by its discharge from the tumor of the *hernia spinalis*, or by extensive exercise, produces the same effects. Great drinkers, apoplectics, they who have undergone the operation of the trepan, they who have been recovered after hanging, remain very long without conception and without judgment.

Let us attend to the reason of these phenomena.

Microcephali are idiots, *macrocephali* very sagacious. But if penetration be ever proportionate to the dimensions of the brain, it is not from any particular organization of this *viscus*, as some have ima-

* See Book III. Obs. 12.

gined.

gined. The brain is only an organ of secretion, and is without relation to the soul, except by its secreting a greater or less quantity of the nervous fluid; and as its volume might more or less obstruct the origin of the nerves, by compressing the membranes which surround it; it is only in these respects, that the brain can influence penetration.

It has been already shewn, that the exercise of regular thought, such as is necessary to penetration, requires a tension of the fibres, particularly of those of the *meninges*. This tension, this augmentation of the organic elasticity of the solids, arises from the immediate influx of the nervous fluid impelled into these organs by the will. The more this fluid, so immediately subject to the soul in voluntary motion*, abounds, the more strongly Man can apply his mind to reflection, and the longer continue it: for the power of the will on our organs, never prevails so far as to render them rigid. Hence it is

* See Book I. Art. Of the different motions of the body.

evident, that *microcephali*, who are not abundantly supplied therewith, must necessarily be stupid; and that *macrocephali*, who possess it in great abundance, must be perfectly the reverse. Hence it is, that large and very fat persons have in general but little sagacity; for the bulk of the body continually increases, and the size of the brain continues the same. This enormous bulk of body, compared to the dimension of the brain, places them in the same class with *microcephali*.

This inability in *microcephali*, and in those who are extremely fat, to increase the organic elasticity of their fibres, often destroys the penetration of the most sagacious. To this is owing that stupidity which affects those who have been recovered after hanging, apoplectics, those who have suffered the operation of the trepan, and hard drinkers. It is this, likewise, which, after acute and chronic diseases, deprives men of the faculty of conception, and reduces them to a state of infancy.

Hence is the reason that, when an inflammatory fever has consumed the nervous

vous fluid, and fatigued our organs by violent and precipitate motions, the mind is affected with a stupor, all its faculties are disordered, and all knowledge lost: this returns not, but in proportion as the body acquires strength, and arrives not to its former perfect state, till the body has entirely recovered its former vigour.

Hence the reason why the violent passions, profound sadness, and narcotics, produce a kind of momentary stupidity.

Hence the reason why some persons have become stupid, by imitating too assiduously the gestures of folly.

It is therefore evident, that the extreme impair of the organic elasticity of the fibres generates stupidity, and that the penetration of every individual depends on his organization.

Organization renders MAN sagacious or dull, sedate or volatile, and the judgment, clear or confused.

Nature has greatly varied the degrees of the delicacy and vivacity of minds. Sagacity, that quickness of understanding,

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in discerning the reason of things, that admirable faculty of comprehending at once a multitude of objects, or rather of reviewing them with rapidity, and penetrating in an instant the most remote relations, observes not the same gradation as penetration. This increases and decays by insensible degrees; the other has no progression, but has its existence confined, as it were, to an indivisible point.

Sagacity consists in readily discovering remote relations. Thus, besides the number and order of our sensations and ideas, necessary to discover those relations, it requires quick apprehension; hence, not only the same physical disposition is necessary as in penetration, that is, force and organic elasticity of the fibres, but also the most perfect degree of this elasticity, or which is the same thing, that degree which is best adapted to second the activity of the will: for the exercise of the understanding in penetration is voluntary. The regular exercise of thought, requires a certain organic tone of the fibres; but this tone is not limited to one particular point, it has a certain extent contained
between

between the opposite extremes of relaxation and rigidity. Madness and stupidity are produced by the extremes, wisdom holds the middle station, and its various degrees occupy the whole interval between them: there are therefore different degrees in this intermediate space, in every one of which the soul may possess penetration. It is in that degree of elasticity, where the fibres have a greater aptitude to yield obedience to the will, that the disposition to sagacity consists. Thus the abundance of nervous fluid*, the primitive elasticity of the fibres, and that degree where the equilibrium between these two powers is most perfect, must be the principle of sagacity, of invention, of that divine enthusiasm which animates genius, and distinguishes those who possess it from the herd of common wits.

* This is true even with respect to the instinct of animals, where nature seems to prompt every action: for although they have particular inclinations, although one may be more or less savage, more or less cruel than another, we shall nevertheless find them to be all stupid, in proportion as they are in want of this fluid, and that the sagacity of every one is according to the dimensions of the brain.

Sagacity

Sagacity therefore falls to the lot of those who are endued both with vigour and sensibility. These are the qualities which alone actuate those towering minds which soar to the first principles of science, and rapidly rush to the goal; whilst others lag far behind, and advance with slow and tardy steps.

In proportion as this *equilibrium* between these two powers is destroyed, the mind necessarily loses its sagacity; but in a different manner; if the balance be in favour of the solids, if the fibres be either too lax or too rigid, the mind is less apt to recall the sensations and ideas deposited in the memory, or to compare them, and less readily discovers their remote relations. The mind is therefore less active, takes up longer time in its reflection, and is slower in tracing any analogy, or investigating any truth. Man, thus organized, may possess judgment, but not wit. The farther he is from this perfect degree of organic elasticity, the more his activity of mind is diminished; he may even be at such a distance from it, as to possess no powers of imagination at all. In this state he can pronounce

on

on the relations of those objects only which immediately act on the senses; and principles, to such a person, are without consequences. Hence the reason why fallies of wit, happy flights of any kind, never occur to us when the mind is fatigued.

But when this *equilibrium* between the fibres and nervous fluid, which forms Man's disposition to sagacity, is destroyed, and the scale inclines to the latter, vivacity of mind becomes volatility. The soul being then strongly affected by the most minute * objects, re-acts † on the body with a force proportionate thereto, communicates to this fluid a very strong impulse which, acting upon weak fibres, renders them rigid, and destroys sagacity, together with the free exercise of the understanding.

To this sensibility add the delicacy, which is inseparable from it, and which renders us incapable of sustaining for any long

* See Book I. Art. Of the organs of sense considered, relatively to their different degrees of sensibility.

† See Book IV. Art. Why the character of the soul is ever congruous to the state of the body.

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time that laborious attention, which is
often necessary to the discovery of remote
relations. Thus too hasty in pronouncing
on the relations of things, the mind al-
ways falls short of the end which it de-
sires to attain, forms forced reasonings,
and continues for ever ignorant.

The ideas, to be just, must be distinct, al-
though these qualities are not inseparable.
Thus in every case where justness of our
ideas requires them to be numerous, the
mind, if united to a body of very deli-
cate texture and extreme sensibility, can
scarce conceive any thing distinctly. In
a man so circumstanced, the mind has
not time to examine thoroughly any of
the objects as they offer : they shift so fast,
that he has hardly time to perceive them.

Hence the mind can have only imper-
fect notions of things, and all its know-
ledge is but a confused huddle of errors
and absurdities.

Organi-

*Organization contributes to render MAN
either prudent or inconsiderate.*

The soul united to weak, elastic and delicate organs, being continually acted upon by strong sensations and sentiments, displays them the moment it is affected by them*. Such a person therefore is incapable of dissimulation. Endued with too great sensibility to dissemble, he is likewise too much so to reflect, to secure his purposes, to comply with, and bend to circumstances, or patiently pursue a scheme, till he finds some clue, which may serve to guide him. Hence he is incapable of that circumspection, which conceals hidden resources, till it sees a fit occasion to make use of them; he knows not what to conceal, but tells the whole of what he knows, and thus betrays his own secrets. Imprudent in discourse, he is so likewise in his designs and actions; his ardor ever carries him to lengths little suited to his strength, and by the improper use he makes of it, almost all his efforts prove ineffectual; in

* See Book IV. How organization renders Man open-hearted or a dissembler.

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a word, he is neither fit for executing nor
for counsel.

*Prudence therefore depends on that state
of the machine, on that tone of the fibres
which promotes the free exercise of thinking,
by moderating the vivacity of the sensitive fa-
culty.* Only the Man, whose organs are
thus formed, can be severe, yet gentle,
tender, though not weak, and high-spiri-
ted without being a *bravado*; he alone
can conceal his designs under the veil of
silence, and be at once communicative
and discreet. This calm, this exter-
nal serenity proceeds therefore from a
natural coolness of temper; and it is to the
want of sensibility in our organs, that this
boasted wisdom, this prudence we va-
lue ourselves so much upon are owing.

*Why Man appears to lose some of his mental
Faculties without losing the others.*

Some men lose the power of meditat-
ing, yet retain their other faculties. Some
lose remembrance, imagination, the power
of reflection, yet retain that of recollec-
tion and judgment: some forget one kind
of

of ideas, one sort of knowledge, without prejudice to others: in a word, some seem to lose every mental power, instinct excepted.

The most celebrated philosophers, to account for these phenomena, have imagined a system, plausible at first sight, but in reality exceedingly absurd. They have first supposed, contrary to truth, that each faculty of the soul has some particular organ for its seat, entirely disjoined from, and without relation to the others. They have afterwards laid it down as a maxim, that, when one of these organs is vitiated, the faculty resident therein is depraved likewise. Finally, to make this system quadrate with facts, they have concluded, that in the general disarrangement of the machine, every part of which is intimately connected, these different organs, seats of the different faculties*, are not all affected at the same time.

To elucidate these phenomena, I shall not undertake a mysterious explanation,

* See the *Physiology of Le Cat*, tome i. page 221.

Paris edition.

which

which supposes us to be endowed with knowledge which we have not ; nor imitate the explanations of others, which are equally repugnant to reason and experience. All these phenomena, which appear so whimsical, and so impossible to account for, according to the system of these philosophers, are so very simple, according to that which is here established, that the only thing to be wondered at is their simplicity. We have seen that reason, imagination, remembrance, recollection, penetration, sagacity, &c. are powers of the mind, dependent on the different tones of the organic elasticity of the fibres. It is therefore evident, that these effects must disappear with their causes. I shall attempt farther to develop this principle, and give it the clearest evidence of truth.

These faculties of the soul, viz. sensibility, will, memory, and understanding, have different functions, as has been already proved ; but these faculties unite and combine in many different manners : from these their combinations result thought, and the different operations of the mind. But unless they act conjunctly,

ly, Man has neither sentiments nor ideas ; their separation destroys every operation of the mind, and, in appearance, annihilates the faculties themselves.

Although these different faculties mutually combine, they however combine not all in the same act : according as their combination varies, so much the more different are their results. Besides, though our intellectual faculties are the sole principles of the operations of the soul, and although some are active of themselves, their exercise is nevertheless entirely dependent on the body. The mind cannot proceed alone : it ever requires a certain degree of organic elasticity in the fibres, to think, reflect, meditate, &c. From these different degrees of the organic elasticity of the fibres, results every diversity in the operations of the mind.

Regular thought ever requires a tension of the fibres : but to think on some particular subjects, there is required a much greater degree of organic elasticity in the fibres, than to think on some others ; as on metaphysical subjects, than on those of elementary geometry ; there is likewise

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required a much greater degree of organic elasticity to meditate than to reflect, to imagine something new, than to judge of simple facts. Thus with one degree of organic elasticity Man can reflect, with another meditate; so with one he can imagine, and with another weaker degree, which leaves him unable to recall the ideas and sensations formerly deposited in the memory, he can pronounce on his present sensations only, and seems to have lost every faculty but instinct: with a degree yet weaker than this, he is unable to combine two single sensations, and is destitute of every sentiment, even that of his own existence.

Thus Man may lose the power of meditation, and retain that of reflection; he may lose imagination, sagacity, and penetration, and retain good sense; lastly, he may lose judgment, and yet retain instinct.

Both remembrance and recollection require the organic elasticity of the fibres; but not in an equal degree. Recollection requires the greater degree of tension of the two, as any one may be convinced by the efforts which a mind, exhausted by study,

study, or during the state of convalescence or drowsiness, vainly makes to recall the most familiar ideas, such as when called to mind by being mentioned by others, it remembers to have before received. This is very natural; for it requires more attention to fix on an absent object, than on one which is present; to recall an analogy without the aid of the senses, as in remembrance by the assistance of objects, than to discover its identity: Man therefore may lose recollection and yet retain remembrance.

Finally, a greater degree of organic elasticity is required to recall extraordinary ideas, than to recollect those which are familiar; and abstract ideas than simple: so likewise Man may forget one particular sort of ideas, and yet retain another. Thus the different degrees of organic elasticity of the fibres produce new combinations, which interrupt the succession of our thoughts, disorder the chain of our ideas, and seem even to annihilate some of our mental faculties, while they leave us the free exercise of others. This is the simple and manifest cause of these singular phenomena.

The different degrees of organic elasticity required in the different operations of the mind, may be determined by comparing the course of the fluids, the number of pulsations, their different degrees of force and vivacity, in one man during meditation, in another during reflection, and in another during revery; and by comparing the course of the fluids, the number of pulsations, their different degrees of force and vivacity in the same man in all these different states.

Thus having shewn the principles of these phenomena in the different tones of the fibres, having discovered the truth of these laws in Nature, we may easily proceed to estimate their effects: notwithstanding this subject may be extremely complicated, and may appear to have but little connection with mathematics, it is possible to determine their relations, and to subject them to a precise evaluation; the balance has been already pointed out, it now remains only to take the amount.

From what has preceded, it is certain that the propensities, the affections and character of the soul, folly, wisdom, stupidity, pru-

prudence, reason, imagination, recollection, remembrance, penetration, delicacy, sublimity, depth, sagacity and genius, are not qualities inherent in the mind, but modes of the soul's existence, depending on the state of the organs of the body, as for instance, colours, sounds, heat, cold, &c. are not essential attributes of matter, but qualities dependent on its texture, and on the motion of its constituent corpuscles. It is therefore evident, that organization alone causes almost every difference which is observed between souls; that they receive their principal characteristics from the corporeal organs; and that, supposing them really in their nature different from each other, this difference would be of no effect, so long as they continue united to the body.*

Thus every thing in Nature is influenced by physical laws.

Corporeal sensibility, the regular or disordered course of our fluids, primitive or or-

* Let it be once more noticed, that I pretend not to subject the *whole* to physical laws; I am well assured, that the soul *partly* receives its character from moral causes.

ganic

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ganic elasticity, the rigidity or relaxation of the fibres, the force or volume of the organs, are the causes of the surprising diversities in souls, and the secret principles of that great influence of the soul on the body, and of the body on the soul, hitherto deemed an impenetrable mystery.

Such are the secret causes of that singular harmony, which philosophers have observed between the two substances which form our being, but were unable to explain.

Such, in a word, are the true foundations, the solid basis of a science, wherein every thing appeared arbitrary, obscure and mysterious.

I would here conclude my work, were philosophers only to be my readers: to such it might be sufficient to explain the principles on which I ground my doctrine, and I might have spared myself the trouble of entering into these particulars which are necessary to elucidate them. But this were lost labour: since, for one reader who can develop the whole of a system by the mere outlines, there are a thousand who must see the whole chain of reasoning,

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soning, in order to comprehend the principles on which it is established.

To these it is necessary to enter into a minute discussion: it is not enough that they have given them a clue to guide them to the truth, and have the path pointed out to them; they must be, as it were, led by the hand through all the mazes of the labyrinth; otherwise they must unavoidably be bewildered in it.

END OF THE SECOND VOLUME.

ERRATA



- Page 34, line 2, *for* though, *read* through.
- 72, l. 4, *f.* causing it to, *r.* causing the scale to.
- 109, l. 3, *f.* ever uniform, *r.* pretty uniform.
- 115, l. 8, *f.* ends not, *r.* ends not here.
- 121, l. 23, *f.* less just, *r.* less righteous.
- 124, l. 10, *f.* inactive, *r.* active.
- 142, l. in the title, *f.* observations, *r.* farther observations.
- 144, l. 11, *f.* no long, *r.* no longer.
- 162, l. 17, *f.* of their image, *r.* of the images
- 187, l. 6, their sensibility, *r.* their tension, and consequently their sensibility.
- 219, l. 10 *f.* fibres, *r.* fibrillæ.
- l. 12, *f.* impel it, *r.* impel it into the tube they form.
- 226, last line, *f.* sentiment, *r.* sense.
- 232, l. 14, *f.* elasticity, *r.* strength.
- 236, l. 11, *f.* covered, *r.* recovered.
- 238, l. 2, dele spirits.
- 240, l. 16, *f.* tense, *r.* tense to such a degree.
- 244, l. 6, *f.* gradually, *r.* accidentally,